APPENDIX A

MENDOTA POOL GROUP MEMBERSHIP

Mendota Pool Group Membership

The Mendota Pool group is an unincorporated association, consisting of the following members:

Baker Farming Co.

Blackburn Farming Co., Inc.

Britz Mendota, TIC.

Coelho West Farms

Conejo Farms

Fordel, Inc.

Hansen Farms

H.G.H. Farms

Meyers Farming I

Terra Linda Farms I

JC&S Land Co.

APPENDIX B

LONG-TERM MONITORING PROGRAM (2001)

LONG TERM MONITORING PROGRAM (2001)

A comprehensive monitoring program was initiated in 1999 to monitor the long-term influence of MPG pumping on groundwater levels and quality, surface-water flow direction and quality, and land surface subsidence. Details of the 1999 monitoring program were provided in the Phase I report (KDSA and LSCE 2000a). The monitoring program was revised in 2000, and details of this program were provided in the Phase II report (KDSA and LSCE 2000b). Additional changes to the monitoring program have been made for 2001, and details of the 2001 program are provided in this appendix. The 2001 monitoring program is summarized on Table B-1. The design of a sediment sampling program scheduled to begin in 2001 is also discussed below.

B.1 PUMPAGE

Pumpage of MPG wells along the Fresno Slough branch of the Mendota Pool is measured on a weekly basis by the San Luis Delta-Mendota Water Authority (Authority) at the introduction points where water from the MPG wells is pumped into the Pool. Pumpage of individual wells in FWD is monitored on a monthly frequency by the MPG. The MPG maintains records that show whether the water is used for exchange or for transfer to WWD or is used directly to irrigate overlying or adjacent lands.

Non-MPG pumpage within the study area also must be determined so that the groundwater model can be used to estimate the proportion of the total drawdown in the area that is attributable to MPG transfer pumping. Non-MPG pumpage from all known agricultural and other large capacity wells within the study area is obtained from various sources, but pumpage of domestic wells has been considered small enough to be ignored for modeling purposes. Pumpage data obtained from the City of Mendota and CCID are reported on at least a monthly frequency. Pumpage from Newhall Land and Farming and Columbia Canal Co. wells is estimated from pump tests and monthly power records. Pumpage estimates are also obtained from Spreckels Sugar Co., B & B Ranch, and Locke Ranch.

B.2 WATER LEVEL MEASUREMENTS

Water level measurements have been made in a large network of wells in the Mendota area in order to determine the water level impacts caused by MPG pumping. The wells in the monitoring network include both "shallow" (completed to a depth of 130 feet or less) and "deep" (completed below the A-clay but above the Corcoran Clay, i.e. generally in the 200 to 450 foot depth range) water supply wells, and some shallow and deep monitoring wells. Manual water-level measurements are being made in approximately 65 wells on a bi-monthly (every other month) frequency. This includes 21 shallow and 44 deep wells. These wells are listed on Table B-2 along with the entity responsible for monitoring each well, and the well locations are plotted on Figure B-1. A total of 50 wells are monitored by the MPG, four wells are monitored by Columbia Canal Co., and 11 wells are monitored by NLF. Three rounds of water level monitoring have already occurred in 2001 (January, March, and May). Future monitoring in 2001 will occur in July, September, and November.

Three continuous water-level recorders are in operation in 2001 and will be continued over the long term. Two of these recorders are in monitoring wells associated with the Fordel and Yearout compaction recorders, and the third is installed in FWD well R-5 (an unused production well).

B.3 GROUNDWATER QUALITY

Groundwater quality sampling will be expanded in 2001. When selecting the additional wells, the emphasis is on wells in the MPG well field west of the Fresno Slough where historical water quality degradation has been documented. The primary purpose of the sampling is to evaluate changes in groundwater quality caused by MPG transfer pumping. The results will also be used to check the accuracy of the selenium and salt load predictions and to improve the accuracy of future predictions.

Water quality at the MPG introduction points will be sampled twice in 2001 for electrical conductivity (EC). There is a total of 57 MPG introduction points, including several that were added in 2001, but less than half of these are in use at any one time. Approximately 26 introduction points were sampled in 1999 and 2000. Introduction point sampling is expected to occur in June and October.

Groundwater quality sampling is planned for at least 59 wells in 2001. 34 of these will be sampled by the MPG and 25 wells will be sampled by other entities. The wells included in the groundwater sampling program are listed on Table B-3, and the well locations are plotted on Figure B-2. The wells sampled by the MPG include the 14 MPG production wells that were sampled in either 1999 or 2000 and 13 additional MPG production wells.

All of these wells will be sampled twice in 2001 so that any changes in water quality occurring over the course of the irrigation season can be detected. The first sampling round will be conducted in June and the second in October. Both sets of samples will be analyzed for EC, TDS, pH, major cations and anions, and other inorganic constituents including boron, selenium, arsenic, and molybdenum. In addition, the MPG has installed several new shallow wells west of the Fresno Slough in 2001, and each of these will be sampled once in 2001 to determine the baseline water quality.

Results from routine groundwater sampling conducted by other entities will also be obtained and incorporated into the monitoring reports that will be prepared each year. These are expected to include four monitoring wells owned by the Spreckels Sugar Co. (MW-1, MW-3, MW-11 and MW-14), six production wells owned by Newhall Land and Farming (W-53, W-74, W-78, W-89, W-94, and W-95), and six CCID production wells (5A, 15B, 28B, 32B, 35A, and 38A). The results of any sampling conducted by the City of Mendota in its production wells and by Meyers Farming in its monitoring wells will also be included.

B.4 SURFACE-WATER FLOW DIRECTION (WATER BUDGET)

The primary objective of the water budget analysis is to determine the flow direction in the Fresno Slough branch of the Mendota Pool at Transect A-A' (Figure B-3). Water budgets calculated for the portion of the Fresno Slough south of Section A-A' are considered to be more accurate than similar budgets for the area north of this section because of measurement errors associated with the DMC inflow and the SJREC diversions. The water budget for the southern area will be calculated on a daily basis in 2001. Daily records of inflows to and outflows from the Pool south of Section A-A' will be obtained. Included in those records will be MPG pumping into the Fresno Slough, Kings River (James Bypass) inflows, and inflows and diversions by the MWA and James and Tranquility Irrigation Districts in the southern portion of the Pool. Pool evaporation, seepage, and change in storage will be estimated as previously done in 1999 and 2000.

B.5 SURFACE-WATER QUALITY

Ten surface-water sampling locations in the Mendota Pool were established as part of the 1999-2000 monitoring programs. Three additional sampling locations in the southern portion of the Fresno Slough branch of the Pool were added in the fall of 2000: Whites Bridge, Lateral 6 and 7, and the James Irrigation District Booster Plant. The Whites Bridge site is located at the northern boundary of the Mendota Wildlife Area (MWA) and the Lateral 6 and 7 intake is located at the southern boundary of the MWA. Beginning in May 2001, the sampling site at Whites Bridge was moved about one-quarter mile south to allow more distance for mixing of the water pumped in by the MPG wells north of Whites Bridge with other water in the Pool. The sample location in the MWA used in 1999 and 2000, approximately one-mile south of Whites Bridge, will be discontinued. The 12 sampling locations for 2001 are shown on Figure B-3, and the surface-water quality sampling program is summarized on Table B-4.

Monthly sampling at the three locations in the southern portion of the Pool began in October 2000. These samples have been analyzed for irrigation water suitability which includes TDS, EC, pH, major cations (calcium, magnesium, potassium, and sodium), major anions (carbonate, bicarbonate, sulfate, chloride, nitrate, and fluoride), and other constituents (boron, copper, iron, manganese, and zinc). The sodium adsorption ratio (SAR) is also calculated for these samples. Selenium, arsenic, and molybdenum have been added to this list beginning in May 2001.

In 2001, two sampling rounds (approximately July and October) will be conducted at the other nine surface-water sampling locations. These samples will also be analyzed for the constituents listed above.

Data from the continuous EC recorder at the DMC inflow to the Pool (Check 21) will be obtained from Reclamation. EC data from the recorders at the five SJREC canal intakes will also be obtained. James Irrigation District plans to install an EC recorder at its booster plant in June 2001, and data from this recorder will be included in the analysis. The locations of the EC recorders are shown on Figure B-3.

Additional EC monitoring will be conducted at the new MWA sampling location south of Whites Bridge on two occasions in 2001 to determine the extent of mixing of water pumped in by the MPG wells near Jack's Resort with water in the Pool. A boat transect will be conducted to collect samples at a series of locations and depths across the Pool. The samples will be analyzed in the field using an EC meter. This sampling will be conducted in June and October.

B.6 COMPACTION/SUBSIDENCE

Compaction and water levels will continue to be monitored continuously at the Fordel and Yearout extensometers. Also, the elevation of the land surface at each station will be determined annually as part of the Global Positioning System (GPS) survey of the Outside Canal and the DMC, which has been conducted since 1996 for CCID, the San Luis and Delta-Mendota Water Authority, Tranquility Irrigation District, and WWD. In addition, because of concerns about the potential impact of subsidence on the levee system, annual surveys of the land surface will be made at six other locations including three locations along the Fresno Slough branch of the Pool and three locations along the San Joaquin River arm.

B.7 SEDIMENT SAMPLING

Data are currently not available to evaluate the quality of Pool sediments. Therefore, a preliminary design for a sediment sampling program has been developed and is described in this section. The objectives of the sediment sampling program are to provide a baseline characterization of metal concentrations in Pool sediments and to allow for future identification of temporal trends in sediment quality.

To assess spatial effects, samples will be collected at eight stations throughout the extent of the Pool. The stations will be located in areas that are not considered to be influenced by MPG inflows, as well as stations that could potentially receive inputs of metals from MPG water. Sediment sampling stations will be largely collocated with the water quality sampling stations. The sampling stations will also allow estimation of metals inputs from the San Joaquin River, the DMC, and the James Bypass. The stations will be located in the Pool near the Columbia Canal intake, Mendota Dam, the DMC outlet, the Firebaugh Intake Canal intake, the Etchegoinberry introduction point, the Meyers Farming MS-5 introduction point, the MWA south of Whites Bridge, and the Lateral 6 & 7 intake (Figure B-3).

Replicate samples will be collected from each sampling location. Unfortunately, data are not available to assess the natural variability of the selenium concentrations and thereby estimate the number of replicates that need to be collected at each station. As a starting point, it is recommended that a minimum of three replicate samples be collected at each station. The number of replicates required will be re-evaluated after the 2001 sampling program is completed and the data analyzed. Each sample will be analyzed for the following parameters: selenium, arsenic, boron, molybdenum, clay percentage, cation exchange capacity, EC, total organic carbon, and pH. Concentrations will be expressed on a sediment dry weight basis.

Baseline sediment sampling will occur in July 2001 concurrently with the first water quality sampling event. Subsequent sediment sampling events will occur in the spring and fall of 2002. Because changes in metal concentrations in sediment are expected to be gradual, future sampling will be conducted annually in the fall for several years to determine if metals are accumulating. The fall samples must be collected before the Pool is drained, because exposure of the sediment to air can alter its chemistry. If the annual sampling results show only small changes from year to year, it may be appropriate to reduce the sampling frequency to biennial.

Table B-1. Summary of 2001 Monitoring Program

Item	Description	Number/Frequency
Pumpage	Number of introduction points measured	57[1]
	Frequency of measurements	Weekly
	Pumpage by others (measured or estimated)	Monthly (as available)
	Frequency for other wells (City of Mendota, NLF, CCID, and Locke ranch)	Monthly
Groundwater Levels	Number of wells measured manually	65
	Frequency of measurements	Bi-monthly
	Number of wells measured continuously	3[2]
Groundwater Quality	Number of MPG introduction points sampled	26[3]
	Number of wells sampled	59[4]
	Number of sampling rounds	2
Surface-Water Flow	Inflow measurements	Daily
	Outflow measurements	Daily
	Frequency of water budget calculation	Daily
Surface-Water Quality	Number of sample locations	12
	Number of sampling rounds	2[5]
	Continuous EC recorders (DMC & SJREC intakes)	6
Subsidence	Number of compaction recorders	2
	Frequency of measurements	Continuous
	Land surface elevation monitoring locations	12
Sediment Sampling	Number of sample locations	8
	Number of sampling rounds	1
	Number of replicates per station	3

[1] There is a total of 57 MPG introduction points, but less than half of these are in use at any one time.
[2] USGS monitoring well 31J3 west of the Mendota Airport, Yearout Ranch extensometer, and FWD well R-5.
[3] All introduction points in use in June and October will be sampled. 26 introduction points were sampled in 1999 and 2000.
[4] 34 wells to be sampled by the MPG in June and October. 25 wells to be sampled by other entities. In addition, any new MPG wells installed in 2001 will be sampled once.
[5] Twice (June and October) at nine locations. Monthly at three locations in the southern portion of the Mendota Pool.

Table B-2. Wells Used for Water Level Monitoring in 2001

Owner	Well ID	State Well No.	Total Depth (ft)	Perf. Interval (ft)	Seal Depth (ft)	Casing Dia. (in)	Wellhead Elevation (ft msl)	Drillers Log	Entity Conducting Monitoring
Central California ID	5A	T13S/R15E-19G1	260	100-260	20	16	153.14	Y	MPG
	15B	T13S/R15E-12E1	180	100-180	20	16	150.06	Y	MPG
	28B	T13S/R14E-13B3	302	100-225	NA	18	152.04	Y	MPG
	32B	T13S/R14E-12B3	225	100-225	NA	16	152.81	Y	MPG
	35A	T13S/R15E-12L1	190	80-190	20	16	151.11	Y	MPG
	38A	T13S/R14E-12B3	290	126-290	88	16	153.08	Y	MPG
Firebaugh Canal WD	24R1	T13S/R14E-24R1	326	216-316	NA	16	NA	Y	MPG
	25D2	T13S/R14E-25D2	NA	NA	NA	NA	NA	N	MPG
Columbia Canal Co.	CC-1	T13S/R15E-25	NA	NA	NA	NA	NA	N	CCC
	Lopes-1	T13S/R15E-16	NA	NA	NA	NA	NA	N	CCC
	Lopes-Obs.	T13S/R15E-17	105	80-100	20	2	NA	Y	CCC
	USBR-4	T13S/R15E-22	105	60-100	20	2	NA	Y	CCC
USBR	19R1	T13S/R15E-19R1	247	NA	NA	NA	NA	164.5	MPG
Newhall Land & Farming	W-42	T13S/R15E-4	390	150-390	20	16	NA	Y	NLF
	W-53	T13S/R15E-21	400	150-390	20	16	NA	Y	NLF
	W-74	T13S/R15E-7	380	200-380	20	16	NA	Y	NLF
	W-78	T13S/R15E-16	405	150-405	20	16	NA	Y	NLF
	W-89	T13S/R15E-2	500	234-498	NA	16	NA	Y	NLF
	W-94	T13S/R15E-22	510	225-498	20	16	NA	Y	NLF
	W-95	T13S/R15E-25	500	234-498	20	16	NA	Y	NLF
	MW-2	T13S/R15A-25	80	40-80	NA	4	NA	Y	NLF
	MW-3	T13S/R15E-16	80	40-80	NA	4	NA	Y	NLF
	MW-4	T13S/R15E-3	80	40-80	NA	4	NA	Y	NLF
	MW-5	T12S/R15E-33	95	35-95	NA	4	NA	Y	NLF
Mitigation Land Trust	MLT-W	T13S/R15E-20G2	NA	NA	NA	NA	157.19	N	MPG
B & B Ranch	Mowry Diesel	T13S/R15E-21K1	NA	NA	NA	NA	164.5	N	MPG
Spreckels Sugar Co.	MW-1	T14S/R15E-4Q	82	38-78	20	6	166.79	Y	MPG
	MW-3	T14S/R15E-4H	82	39-79	20	6	170.64	Y	MPG
	MW-6	T13S/R15E-34N	82	38-78	20	6	166.7	Y	MPG
	MW-10	T13S/R15E-34	150	110-150	NA	NA	164.77	N	MPG
	MW-11	T13S/R15E-34N	150	120-150	110	6	163.6	Y	MPG
	MW-14	T13S/R15E-33F	190	120-190	110	6	164.0	Y	MPG
	MW-32	T13S/R15E-35	70	37-67	23	NA	170.1	Y	MPG
City of Mendota	No. 2	T13S/R15E-30	250	140-250	134	16	NA	Y	MPG
	18Q	T13S/R15E-19	252	132-252	122	2	NA	Y	MPG

Table B-2 Wells Used for Water Level Monitoring in 2001 (Continued)

Owner	Well ID	State Well No.	Total Depth (ft)	Perf. Interval (ft)	Seal Depth (ft)	Casing Dia. (in)	Wellhead Elevation (ft msl)	Drillers Log	Entity Conducting Monitoring
USGS	31J3	T13S/R15E-31J3	415	400-410	NA	6	160.2	Y[1]	MPG
	31J4	T13S/R15E-31J4	70	55-65	NA	6	160.5	Y[1]	MPG
	31J5	T13S/R15E-31J5	260	240-250	NA	6	160.2	Y[1]	MPG
	31J6	T13S/R15E-31J6	500	480-490	NA	6	161.5	Y[1]	MPG
USGS	10A1	T14S/R14E-10A1	18	13-18	2	2	202.2	Y	MPG
	10A2	T14S/R14E-10A2	88	81-86	75	2	201.0	Y	MPG
	10A3	T14S/R14E-10A3	347	332-342	323	6	202.5	Y	MPG
	10A4	T14S/R14E-10A4	194	178-188	171	5	201.8	Y	MPG
Hansen Farms	7C1	T14S/R15E-7C1	200	140-200	50	8	NA	Y	MPG
Fordel, Inc.	M-1	T13S/R15E-20N1	310	200-300	180	18	159.61	Y	MPG
	M-2	T13S/R15E-20N2	100	50-100	20	12	159.06	Y	MPG
Terra Linda Farms	TL-6	13S/15E-29	400	200-400	170	18	NA	Y	MPG
	TL-10A	T13S/R15E-29C	108	50-80	20	12	156.1	Y	MPG
	HS-3	13S/15E-29F2	410	120-410	none	16	154.03	Y	MPG
	D&H	T13S/R15E-29K	370	160-360	none	16	NA	Y	MPG
Etchegoinberry	No. 2	T13S/R15E-29R3	125	50-100	20	16	151.26	Y	MPG
Coelho/Coelho/Fordel	CCF-2	T13S/R15E-32	400	200-400	125	18	NA	Y	MPG
Meyers Farming	MS-4	T14S/R15E-5	165	60-130	80	16	NA	Y	MPG
	MS-5	T14S/R15E-5	230	100-220	50	16	NA	Y	MPG
	S-2	T14S/R15E-5	78	23-78	16	2	162.34	N	MPG
	P-6	T14S/R15E-8	79	24-79	18	2	161.08	N	MPG
	E-2	T13S/R15E-33F	80	38-68	28	2	158.35	Y	MPG
Five Star	FS-5	14S/15E-9C6	126	60-110	20	12	155.81	Y	MPG
Farmers WD	R-5	T13S/R15E-26B1	340	180-322	72	16	NA	Y	MPG
	R-7	T13S/R15E-23P1	400	100-400	74	20	166.18	Y	MPG
	R-8	T13S/R15E-27H1	490	120-480	100	20	164.38	Y	MPG
	WL-2	T13S/R15E-26K1	242	101-242	16	20	170.23	Y	MPG
	EL-1	T13S/R15E-25	268	98-268	16	20	NA	Y	MPG
Baker Farming Co.	BF-2	T13S/R15E-22	420	140-420	100	16	NA	Y	MPG
Panoche Creek Farms	PCF-1	T13S/R15E-27	Deep	NA	NA	NA	NA	N	MPG

NA = Information not available

[1] E-log available.

Table B-3. Wells Used for Water Quality Monitoring in 2001

Owner	Well ID	State Well No.	Total Depth (ft)	Perf. Interval (ft)	Seal Depth (ft)	Casing Dia. (in)	Wellhead Elevation (ft msl)	Drillers Log	Entity Conducting Monitoring
Central California ID	5A	T13S/R15E-19G1	260	100-260	20	16	153.14	Y	CCID
	15B	T13S/R15E-12E1	180	100-180	20	16	150.06	Y	CCID
	28B	T13S/R14E-13B3	302	100-225	NA	18	152.04	Y	CCID
	32B	T13S/R14E-12B3	225	100-225	NA	16	152.81	Y	CCID
	35A	T13S/R15E-12L1	190	80-190	20	16	151.11	Y	CCID
	38A	T13S/R14E-12B3	290	126-290	88	16	153.08	Y	CCID
Newhall Land & Farming	W-53	T13S/R15E-21	400	150-390	20	16	NA	Y	NLF
	W-74	T13S/R15E-7	380	200-380	20	16	NA	Y	NLF
	W-78	T13S/R15E-16	405	150-405	20	16	NA	Y	NLF
	W-89	T13S/R15E-2	500	234-498	NA	16	NA	Y	NLF
	W-94	T13S/R15E-22	510	225-498	20	16	NA	Y	NLF
	W-95	T13S/R15E-25	500	234-498	20	16	NA	Y	NLF
Spreckels Sugar Co.	MW-1	T14S/R15E-4Q	82	38-78	20	6	166.79	Y	Spreckels S. Co.
	MW-3	T14S/R15E-4H	82	39-79	20	6	170.64	Y	Spreckels S. Co.
	MW-6	T13S/R15E-34N	82	38-78	20	6	166.7	Y	Spreckels S. Co.
	MW-10	T13S/R15E-34	150	110-150	NA	NA	164.77	N	Spreckels S. Co.
	MW-11	T13S/R15E-34N	150	120-150	110	6	163.6	Y	Spreckels S. Co.
	MW-14	T13S/R15E-33F	190	120-190	110	6	164.0	Y	Spreckels S. Co.
	MW-32	T13S/R15E-35	70	37-67	23	NA	170.1	Y	Spreckels S. Co.
City of Mendota	No. 2	T13S/R15E-30	250	140-250	134	16	NA	Y	City of Mendota
	No. 3	T13S/R15E-30	308	168-288	150	14.5	NA	Y	City of Mendota
	No. 4	NA	310	180-290	180	14	NA	Y	City of Mendota
	No. 5	NA	258	174-246	160	16	NA	Y	City of Mendota
USGS	31J4	T13S/R15E-31J4	70	55-65	NA	6	160.5	Y[1]	MPG[2]
	31J5	T13S/R15E-31J5	260	240-250	NA	6	160.2	Y[1]	MPG[2]
	10A2	T14S/R14E-10A2	88	81-86	75	2	201.0	Y	MPG[2]
	10A4	T14S/R14E-10A4	194	178-188	171	5	201.8	Y	MPG[2]
Hansen Farms	7C1	T14S/R15E-7C1	200	140-200	50	8	NA	Y	MPG[2]
Fordel, Inc.	M-1	T13S/R15E-20N1	310	200-300	180	18	159.61	Y	MPG[2]
	M-2	T13S/R15E-20N2	100	50-100	20	12	159.06	Y	MPG[2]
	M-3	T13S/R15E-20N3	100	50-100	20	12	158.65	Y	MPG[2]
	M-6	T13S/R15E-20N6	100	60-100	30	12	NA	Y	MPG[2]
	Biomass	T13S/R15E-32H	510	120-270	110	18	NA	Y	MPG[2]
Terra Linda Farms	TL-1	13S/15E-29C2	285	150-275	140	16	151.65	Y	MPG[2]
	TL-4A	13S/15E-29	120	60-120	50	16	NA	Y	MPG[2]
	TL-5	T13S/R15E-32	400	200-400	170	18	NA	Y	MPG[2]
	TL-7	13S/15E-32	Deep	NA	NA	NA	156.89	N	MPG[2]

Table B-3 Wells Used for Water Quality Monitoring in 2001 (Continued)

Owner	Well ID	State Well No.	Total Depth (ft)	Perf. Interval (ft)	Seal Depth (ft)	Casing Dia. (in)	Wellhead Elevation (ft msl)	Drillers Log	Entity Conducting Monitoring
Coelho/Coelho/Fordel	CCF-1	13S/15E-32	400	200-400	125	18	NA	Y	MPG[2]
Coelho/Coelho	Conejo West	T13S/R15E-29K0	400	200-400	170	18	NA	Y	MPG[2]
Silver Creek Packing	SC-5	T13S/R15E-32J4	410	180-390	none	16	155.97	Y	MPG[2]
	SC-6	13S/15E-32J3	410	180-390	none	16	155.74	Y	MPG[2]
Coelho/Gardner/	CGH-1	T14S/R15E-4D	146	90-130	20	12	NA	Y	MPG[2]
Hansen	CGH-3A	14S/15E-5A	126	50-100	20	12	157.05	Y	MPG[2]
	CGH-5	14S/15E-4	135	70-135	20	12	NA	Y	MPG[2]
	CGH-6A	14S/15E-05A	shallow	-	-	-	157.39	N	MPG[2]
Meyers Farming	MS-1A[2]	14S/15E-5	130	40-130	30	16	NA	Y	MPG[2]
	MS-4	T14S/R15E-5	165	60-130	80	16	NA	Y	MPG[2]
	MS-5	T14S/R15E-5	230	100-220	50	16	NA	Y	MPG[2]
	S-3	NA	79	24-79	17	2	159.05	N	MPG[2]
	P-1	NA	80	25-80	19	2	157.66	N	MPG[2]
	E-1	T14S/R15E-16	80	38-68	27	2	159.42	Y	Meyers
	E-2	T13S/R15E-33F	80	38-68	28	2	158.35	Y	Meyers
Five Star	FS-10	14S/15E-4P	110	20-100	20	12	154.38	Y	MPG[2]
Coelho West	CW-3	14S/15E-9C15	100	50-100	20	12	157.42	Y	MPG[2]
	CW-5	14S/15E-9C17	126	60-110	20	12	157.11	Y	MPG[2]
Farmers WD	R-1	T13S/R15E-35C	280	100-276	none	16	NA	Y	MPG[2]
	R-11	T13S/R15E-34A	510	230-510	74	16	NA	Y	MPG[2]
Baker Farming Co.	BF-2	T13S/R15E-22	420	140-420	100	16	NA	Y	MPG[2]
Panoche Creek Farms	PCF-1	T13S/R15E-27	Deep	NA	NA	NA	NA	N	MPG[2]

NA = Information not available

[1] E-log available

[2] Samples will be analyzed for: EC, TDS, SAR, pH; Anions - bicarbonate, carbonate, chloride, fluoride, nitrate, hydroxide, sulfate, total alkalinity; Cations - calcium, magnesium, potassium, sodium; Other Constituents - arsenic, boron, copper, iron, manganese, molybdenum, selenium, and zinc. Analyses to be performed by FGL.

[3] MS-1A was installed in 2000 as a replacement for MS-1 which was abandoned due to casing failure. Other new MPG wells installed in 2001 will also be sampled.

Table B-4. Surface-Water Quality Monitoring in 2001

Sample Location	Continuous EC Recorder	Sampling Frequency in 2001[1]	Monitoring Entity
Columbia Canal	Yes	June and October	FGL[2]
Mendota Dam	No	June and October	FGL[2]
CCID Main Canal	Yes	June and October	FGL[2]
Mowry Bridge	No	June and October	FGL[2]
Delta-Mendota Canal	Yes	June and October	FGL[2]
CCID Outside Canal	Yes	June and October	FGL[2]
Firebaugh Intake Canal	Yes	June and October	FGL[2]
West of Fordel	No	June and October	FGL[2]
Etchegoinberry	No	June and October	FGL[2]
Mendota Wildlife Area[3]	No	Monthly	FGL[2]
Lateral 6&7	No	Monthly	FGL[2]
James ID Booster Plant	Yes[4]	Monthly	FGL[2]

[1] Samples will be analyzed for: EC, TDS, SAR, pH; Anions - bicarbonate, carbonate, chloride, fluoride, nitrate,hydroxide, sulfate, total alkalinity; Cations calcium, magnesium, potassium, sodium; Other Constituents arsenic, boron, copper, iron, manganese, molybdenum, selenium, and zinc. Analyses to be performed by FGL.

[2] Sampling to be conducted by Fruit Growers Laboratory with supervision by LSCE and KDSA.

[3] Approximately one-quarter mile south of Whites Bridge

[4] EC recorder to be installed in June 2001.

LEGEND

Pool Group Wells:
- Shallow Well
- Deep Well
- Unused Well
- Introduction Site

Other Production Wells:
- Shallow Well
- Deep Well (Above Corcoran Clay)
- Unused Well

Monitoring Wells:
- Shallow Monitoring Well
- Deep Monitoring Well
- Extensometer

2001 Monitoring Program:

GREEN Shallow Well

BLUE Deep Well

NOTES:
1.) "Shallow" wells are completed above the A-clay (maximum depth = 140'). "Deep" wells are completed below the A-clay.

2.) NLF wells W-42, MW-4, and MW-5 are included in the water level monitoring network but are too far north to be shown on this map.

Scale in Feet
0' 1000 2000 4000'

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CAD FILE: G:/Projects/Mendota Pool/99-1-018/Annual Report 2001/Figure_B-1.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 06-14-01 8:51am

Figure B-1
Ground-Water Level Monitoring Network
Mendota Pool 2001 Monitoring Program

LEGEND

Pool Group Wells:

- • Shallow Well
- ● Deep Well
- ◒ Unused Well
- ▲ Introduction Site

Other Production Wells:

- □ Shallow Well
- ⊠ Deep Well (Above Corcoran Clay)
- ◪ Unused Well

Monitoring Wells:

- ○ Shallow Monitoring Well
- ⊗ Deep Monitoring Well
- ♦ Extensometer

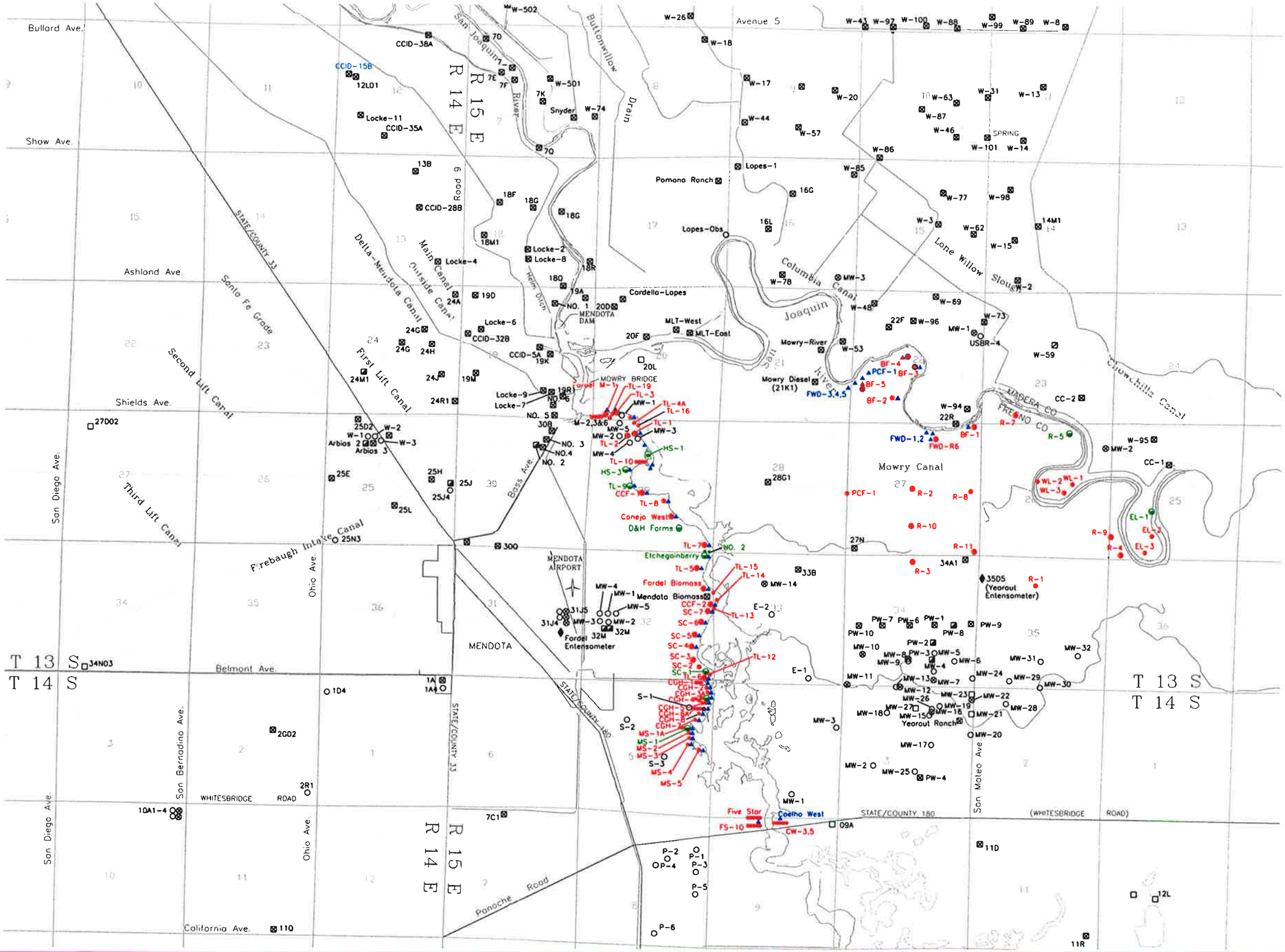
2001 Monitoring Program:

GREEN Shallow Well

BLUE Deep Well

NOTE:

"Shallow" Wells are completed above the A-Clay (maximum depth = 130'). "Deep" wells are completed below the A-Clay.

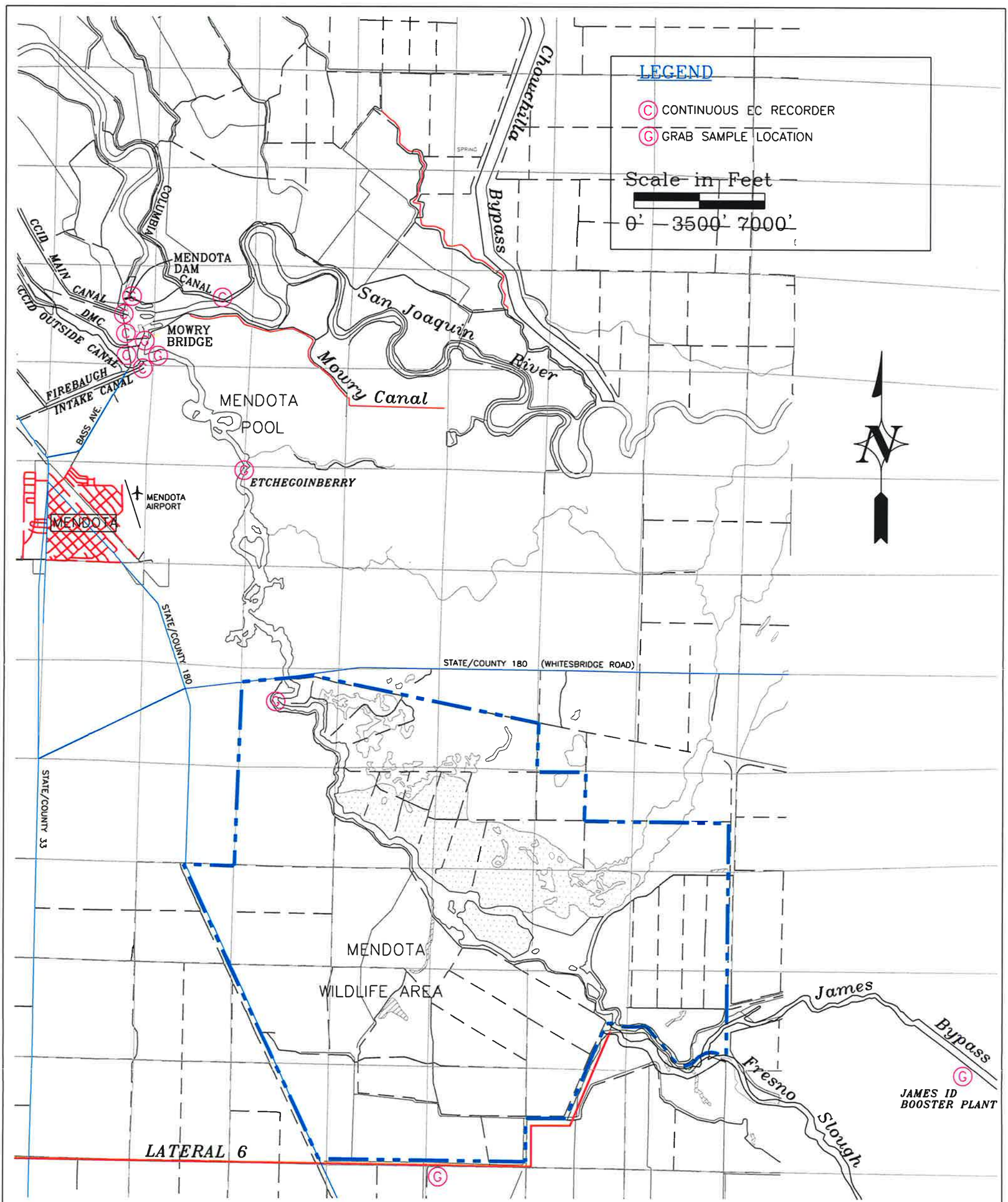


Scale in Feet
0' 1000 2000 4000'

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

CAD FILE: G:/Projects/Mendota Pool/99-1-018/Annual Report 2001/Figure_B-2.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 06-12-01 8:51am

Figure B-2
Ground-Water Quality Monitoring Network
Mendota Pool 2001 Monitoring Program



CAD FILE: G:/Projects/Mendota Pool/99-1-018/E-A/Fig_B-3.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 06-14-01 8:26am

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Figure B-3
Mendota Pool Surface -Water Sampling Locations

APPENDIX C

SUMMARY OF 1999-2001 SURFACE-WATER QUALITY LABORATORY RESULTS (BY SAMPLE LOCATION)

Table C-1. Summary of 1999-2001 Surface-Water Quality Laboratory Results (by sample location)

							Cations				Anions								
Sample Location	Sample Date	Lab[1]	EC µmhos/cm	pH	TDS mg/l	SAR mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	SO_4 mg/l	Cl mg/l	HCO_3 as HCO_3 mg/l	CO_3 as CO_3 mg/l	OH as OH mg/l	Total Alkalinity as $CaCO_3$ mg/l	NO_3 as NO_3 mg/l	Se mg/l	B mg/l
Columbia Canal	02/03/1999	BSK	220	-	140	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	<0.2
Columbia Canal	04/21/1999	BSK	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	0.3
Columbia Canal	05/26/1999	BSK	430	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.3
Columbia Canal	06/30/1999	BSK	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
Columbia Canal	07/08/1999	FGL	248	8.6	190	1.4	12	6	23	2	26	25	50	<10	<10	50	0.7	<0.002	0.1
Columbia Canal	07/28/1999	BSK	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
Columbia Canal	09/29/1999	BSK	450	-	-	-	-	-	-	-	-	-	-	-	-	-	<1	<0.002	0.2
Columbia Canal	10/27/1999	BSK	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
Columbia Canal	11/17/1999	BSK	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
Columbia Canal	06/14/2000	FGL	258	-	150	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.2
Columbia Canal	07/10/2000	FGL	348	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Columbia Canal	07/12/2000	FGL	346	-	210	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
Columbia Canal	08/09/2000	FGL	348	-	210	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
Columbia Canal	08/25/2000	FGL	324	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Columbia Canal	09/13/2000	FGL	348	-	200	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
Columbia Canal	10/11/2000	FGL	451	-	310	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
Mendota Dam	07/08/1999	FGL	395	7.8	240	1.6	20	10	35	2	47	44	110	<10	<10	90	4.4	<0.002	0.2
Mendota Dam	07/21/1999	FGL	228	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendota Dam	08/11/1999	FGL	296	-	170	3.5	16	8	68	4	29	27	80	<10	<10	70	4	<0.002	0.1
Mendota Dam	08/25/1999	FGL	301	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendota Dam	09/08/1999	FGL	378	7.7	230	1.8	18	10	39	2	37	40	100	<10	<10	80	3.2	<0.002	-
Mendota Dam	09/22/1999	FGL	507	7.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendota Dam	11/11/1999	FGL	601	7.8	350	2.4	25	13	60	3	61	77	110	<10	<10	90	7.3	<0.002	0.2
Mendota Dam	07/10/2000	FGL	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendota Dam	08/25/2000	FGL	356	-	-	-	-	-	-	-	30	37	-	-	-	-	-	<0.01	0.1
Mendota Dam	11/06/2000	FGL	447	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SLCC Arroyo Canal	02/03/1999	BSK	230	-	130	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	<0.2
SLCC Arroyo Canal	04/21/1999	BSK	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	0.4
SLCC Arroyo Canal	05/26/1999	BSK	420	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
SLCC Arroyo Canal	06/30/1999	BSK	530	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.3
SLCC Arroyo Canal	07/28/1999	BSK	320	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
SLCC Arroyo Canal	09/29/1999	BSK	640	-	-	-	-	-	-	-	-	-	-	-	-	-	8	0.002	0.3
SLCC Arroyo Canal	10/27/1999	BSK	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
SLCC Arroyo Canal	11/17/1999	BSK	530	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
SLCC Arroyo Canal	06/14/2000	FGL	470	-	280	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.3
SLCC Arroyo Canal	07/17/2000	FGL	460	-	280	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.2
SLCC Arroyo Canal	08/09/2000	FGL	420	-	240	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.2
SLCC Arroyo Canal	09/13/2000	FGL	436	-	250	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.2
SLCC Arroyo Canal	10/11/2000	FGL	509	-	300	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
SLCC Arroyo Canal	12/13/2000	FGL	641	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.2
CCID Main Canal	01/08/1999	USBR	366	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
CCID Main Canal	02/03/1999	BSK	240	-	130	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	<0.2
CCID Main Canal	02/04/1999	USBR	254	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0009	-
CCID Main Canal	03/04/1999	USBR	307	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	-
CCID Main Canal	04/06/1999	USBR	521	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0029	-
CCID Main Canal	04/21/1999	BSK	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.3
CCID Main Canal	05/06/1999	USBR	376	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	-
CCID Main Canal	05/26/1999	BSK	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.23
CCID Main Canal	06/03/1999	USBR	427	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
CCID Main Canal	06/30/1999	BSK	290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.2
CCID Main Canal	07/06/1999	USBR	287	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
CCID Main Canal	07/08/1999	FGL	323	7.8	170	1.4	18	9	29	2	35	32	90	<10	<10	70	3.8	<0.002	0.1
CCID Main Canal	07/28/1999	BSK	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
CCID Main Canal	08/04/1999	USBR	277	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
CCID Main Canal	08/11/1999	FGL	280	-	160	1.1	16	8	22	2	28	24	80	<10	<10	70	2.9	<0.002	0.1
CCID Main Canal	09/02/1999	USBR	298	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0007	-
CCID Main Canal	09/08/1999	FGL	354	8.3	200	1.6	17	10	34	2	33	39	100	<10	<<10	80	2.7	<0.002	-
CCID Main Canal	09/29/1999	BSK	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
CCID Main Canal	10/05/1999	USBR	571	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
CCID Main Canal	10/27/1999	BSK	530	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.3
CCID Main Canal	11/02/1999	USBR	495	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0008	-

							Cations				Anions								
Sample Location	Sample Date	Lab[1]	EC µmhos/cm	pH	TDS mg/l	SAR mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	SO_4 mg/l	Cl mg/l	HCO_3 as HCO_3 mg/l	CO_3 as CO_3 mg/l	OH as OH mg/l	Total Alkalinity as $CaCO_3$ mg/l	NO_3 as NO_3 mg/l	Se mg/l	B mg/l
CCID Main Canal	11/11/1999	FGL	518	7.9	300	2.4	20	12	54	3	39	81	90	<10	<10	70	4.4	<0.002	0.1
CCID Main Canal	11/17/1999	BSK	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	0.2
CCID Main Canal	12/02/1999	USBR	965	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0009	-
CCID Main Canal	01/04/2000	USBR	1018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0072	-
CCID Main Canal	02/02/2000	USBR	767	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0022	-
CCID Main Canal	02/29/2000	USBR	223	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0007	-
CCID Main Canal	04/04/2000	USBR	521	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	-
CCID Main Canal	05/02/2000	USBR	414	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
CCID Main Canal	05/31/2000	USBR	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
CCID Main Canal	06/14/2000	FGL	460	-	270	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.3
CCID Main Canal	07/06/2000	USBR	285	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0077	-
CCID Main Canal	07/10/2000	FGL	426	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCID Main Canal	07/12/2000	FGL	312	-	200.0	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
CCID Main Canal	08/01/2000	USBR	316	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0004	-
CCID Main Canal	08/09/2000	FGL	321	-	200	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
CCID Main Canal	08/25/2000	FGL	344	-	-	-	-	-	-	-	28	35	-	-	-	-	-	<0.01	0.1
CCID Main Canal	09/06/2000	USBR	361	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0008	-
CCID Main Canal	09/13/2000	FGL	343	-	200	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.2
CCID Main Canal	10/03/2000	USBR	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0006	-
CCID Main Canal	10/11/2000	FGL	469	-	270	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.1
CCID Main Canal	10/31/2000	USBR	422	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
CCID Main Canal	11/06/2000	FGL	474	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCID Main Canal	12/05/2000	USBR	513	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0013	-
CCID Main Canal	12/13/2000	FGL	704	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.3
Mowry Bridge	07/08/1999	FGL	291	-	180	-	-	-	-	-	30	27	-	-	-	-	-	-	-
Mowry Bridge	07/21/1999	FGL	274	7.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mowry Bridge	08/11/1999	FGL	266	-	170	-	-	-	-	-	29	22	-	-	-	-	-	-	-
Mowry Bridge	08/25/1999	FGL	293	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mowry Bridge	09/08/1999	FGL	343	8.3	200	-	-	-	-	-	29	39	-	-	-	-	-	-	-
Mowry Bridge	09/22/1999	FGL	550	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mowry Bridge	07/10/2000	FGL	394	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mowry Bridge	08/25/2000	FGL	312	-	-	-	-	-	-	-	24	28	-	-	-	-	-	<0.01	0.1
Mowry Bridge	11/06/2000	FGL	509	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMC Check 21	01/08/1999	USBR	464	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0013	-
DMC Check 21	02/04/1999	USBR	322	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
DMC Check 21	03/04/1999	USBR	308	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0016	-
DMC Check 21	04/06/1999	USBR	575	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0032	-
DMC Check 21	05/06/1999	USBR	372	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0013	-
DMC Check 21	05/26/1999	BSK	450	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.3
DMC Check 21	06/03/1999	USBR	434	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0017	-
DMC Check 21	06/30/1999	BSK	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
DMC Check 21	07/06/1999	USBR	291	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
DMC Check 21	07/08/1999	FGL	291	7.8	170	1.3	17	9	26	2	30	26	80	<10	<10	70	3.7	<0.002	0.1
DMC Check 21	08/04/1999	USBR	264	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0008	-
DMC Check 21	08/11/1999	FGL	269	-	170	1.1	15	8	22	2	28	21	70	<10	<10	60	2.8	<0.002	0.1
DMC Check 21	09/02/1999	USBR	309	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0005	-
DMC Check 21	09/08/1999	FGL	344	8.2	130	1.6	16	9	33	2	29	39	90	<10	<10	70	2.1	<0.002	-
DMC Check 21	10/05/1999	USBR	448	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0006	-
DMC Check 21	11/02/1999	USBR	492	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
DMC Check 21	11/11/1999	FGL	530	8.2	300	2.5	18	12	56	3	33	87	80	<10	<10	70	3.2	<0.002	0.1
DMC Check 21	11/17/1999	BSK	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
DMC Check 21	12/02/1999	USBR	522	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0024	-
DMC Check 21	01/04/2000	USBR	536	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	-
DMC Check 21	02/02/2000	USBR	623	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0019	-
DMC Check 21	02/29/2000	USBR	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0025	-
DMC Check 21	04/04/2000	USBR	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0023	-
DMC Check 21	05/02/2000	USBR	419	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	-
DMC Check 21	05/31/2000	USBR	516	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
DMC Check 21	06/14/2000	FGL	414	-	230	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.3
DMC Check 21	07/06/2000	USBR	301	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0009	-
DMC Check 21	07/10/2000	FGL	371	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMC Check 21	07/12/2000	FGL	289	-	210	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
DMC Check 21	08/01/2000	USBR	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0004	-
DMC Check 21	08/09/2000	FGL	304	-	190	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
DMC Check 21	08/25/2000	FGL	316	-	-	-	-	-	-	-	25	29	-	-	-	-	-	<0.01	0.1
DMC Check 21	09/06/2000	USBR	351	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0009	-
DMC Check 21	09/13/2000	FGL	367	-	240	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.2
DMC Check 21	10/03/2000	USBR	416	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0008	-
DMC Check 21	10/11/2000	FGL	464	-	270	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1

							Cations				Anions								
Sample Location	Sample Date	Lab[1]	EC µmhos/cm	pH	TDS mg/l	SAR mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	SO_4 mg/l	Cl mg/l	HCO_3 as HCO_3 mg/l	CO_3 as CO_3 mg/l	OH as OH mg/l	Total Alkalinity as $CaCO_3$ mg/l	NO_3 as NO_3 mg/l	Se mg/l	B mg/l
DMC Check 21	10/31/2000	USBR	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	-
DMC Check 21	11/06/2000	FGL	517	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DMC Check 21	12/05/2000	USBR	492	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
DMC Check 21	12/13/2000	FGL	581	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
CCID Outside Canal	01/08/1999	USBR	456	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0013	-
CCID Outside Canal	02/03/1999	BSK	280	-	160	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
CCID Outside Canal	02/04/1999	USBR	312	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
CCID Outside Canal	03/04/1999	USBR	307	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0016	-
CCID Outside Canal	04/06/1999	USBR	580	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0029	-
CCID Outside Canal	04/21/1999	BSK	410	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.004	0.3
CCID Outside Canal	05/06/1999	USBR	371	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0015	-
CCID Outside Canal	05/26/1999	BSK	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.3
CCID Outside Canal	06/03/1999	USBR	411	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
CCID Outside Canal	06/30/1999	BSK	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
CCID Outside Canal	07/06/1999	USBR	291	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	-
CCID Outside Canal	07/08/1999	FGL	295	7.9	180	1.3	17	9	26	2	31	28	90	<10	<10	70	3.4	<0.002	0.1
CCID Outside Canal	07/28/1999	BSK	260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.1
CCID Outside Canal	08/04/1999	USBR	352	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
CCID Outside Canal	08/11/1999	FGL	270	-	160	1.2	14	7	22	2	28	22	80	<10	<10	60	2.8	<0.002	0.1
CCID Outside Canal	09/02/1999	USBR	294	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
CCID Outside Canal	09/08/1999	FGL	346	8.5	210	1.4	16	9	29	2	29	39	90	<10	<10	70	2.3	<0.002	-
CCID Outside Canal	09/29/1999	BSK	480	-	-	-	-	-	-	-	-	-	-	-	-	-	2	<0.002	0.2
CCID Outside Canal	10/05/1999	USBR	447	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0009	-
CCID Outside Canal	10/27/1999	BSK	510	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
CCID Outside Canal	11/02/1999	USBR	471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0013	-
CCID Outside Canal	11/11/1999	FGL	596	8.3	350	2.4	26	14	60	3	63	79	110	<10	<10	90	7.4	<0.002	0.2
CCID Outside Canal	11/17/1999	BSK	480	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
CCID Outside Canal	12/02/1999	USBR	237	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	-
CCID Outside Canal	01/04/2000	USBR	742	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
CCID Outside Canal	02/02/2000	USBR	754	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0022	-
CCID Outside Canal	02/29/2000	USBR	444	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0018	-
CCID Outside Canal	04/04/2000	USBR	574	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0027	-
CCID Outside Canal	05/02/2000	USBR	428	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	-
CCID Outside Canal	05/31/2000	USBR	507	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0012	-
CCID Outside Canal	06/14/2000	FGL	478	-	280	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.3
CCID Outside Canal	07/06/2000	USBR	278	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0008	-
CCID Outside Canal	07/10/2000	FGL	426	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCID Outside Canal	07/12/2000	EGL	296	-	200	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
CCID Outside Canal	08/01/2000	USBR	316	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0006	-
CCID Outside Canal	08/09/2000	FGL	314	-	180	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
CCID Outside Canal	08/25/2000	FGL	323	-	-	-	-	-	-	-	26	32	-	-	-	-	-	<0.01	0.1
CCID Outside Canal	09/06/2000	USBR	371	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0009	-
CCID Outside Canal	09/13/2000	FGL	350	-	200	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.3
CCID Outside Canal	10/03/2000	USBR	398	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.001	-
CCID Outside Canal	10/11/2000	FGL	469	-	270	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
CCID Outside Canal	10/31/2000	USBR	428	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0011	-
CCID Outside Canal	11/06/2000	FGL	504	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CCID Outside Canal	12/05/2000	USBR	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0014	-
CCID Outside Canal	12/13/2000	FGL	706	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.3
Firebaugh Intake Canal	02/03/1999	BSK	280	-	170	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	<0.2
Firebaugh Intake Canal	04/21/1999	BSK	400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.003	0.3
Firebaugh Intake Canal	05/26/1999	BSK	440	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.24
Firebaugh Intake Canal	06/30/1999	BSK	290	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.002	0.1
Firebaugh Intake Canal	07/08/1999	FGL	293	7.8	170	1.2	15	8	24	2	30	27	90	<10	<10	70	3.4	<0.002	0.1
Firebaugh Intake Canal	07/28/1999	BSK	260	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.1
Firebaugh Intake Canal	08/11/1999	FGL	269	-	170	1.2	14	8	23	2	28	22	80	<10	<10	60	2.7	<0.002	0.1
Firebaugh Intake Canal	09/08/1999	FGL	366	8.6	210	1.6	17	9	32	2	34	41	90	<10	<10	80	2.7	<0.002	-
Firebaugh Intake Canal	09/29/1999	BSK	540	-	-	-	-	-	-	-	-	-	-	-	-	-	5	0.002	0.3
Firebaugh Intake Canal	10/27/1999	BSK	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
Firebaugh Intake Canal	11/11/1999	FGL	528	8.1	300	2.4	18	11	52	3	38	84	90	<10	<10	70	4.1	<0.002	0.1
Firebaugh Intake Canal	11/17/1999	BSK	490	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.002	0.2
Firebaugh Intake Canal	06/14/2000	FGL	492	-	280	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.4
Firebaugh Intake Canal	07/10/2000	FGL	520	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Firebaugh Intake Canal	07/12/2000	FGL	301	-	190	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
Firebaugh Intake Canal	08/09/2000	FGL	335	-	190	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
Firebaugh Intake Canal	08/25/2000	FGL	338	-	-	-	-	-	-	-	27	35	-	-	-	-	-	<0.01	0.1
Firebaugh Intake Canal	09/13/2000	FGL	350	-	210	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
Firebaugh Intake Canal	10/11/2000	FGL	482	-	270	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.1
Firebaugh Intake Canal	11/06/2000	FGL	464	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

							Cations				Anions								
Sample Location	Sample Date	Lab[1]	EC µmhos/cm	pH	TDS mg/l	SAR mg/l	Ca mg/l	Mg mg/l	Na mg/l	K mg/l	SO_4 mg/l	Cl mg/l	HCO_3 as HCO_3 mg/l	CO_3 as CO_3 mg/l	OH as OH mg/l	Total Alkalinity as $CaCO_3$ mg/l	NO_3 as NO_3 mg/l	Se mg/l	B mg/l
Firebaugh Intake Canal	12/13/2000	FGL	705	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.01	0.3
West of Fordel	07/08/1999	FGL	402	-	260	-	-	-	-	-	49	46	-	-	-	-	-	-	-
West of Fordel	07/21/1999	FGL	285	7.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West of Fordel	08/11/1999	FGL	343	-	210	-	-	-	-	-	39	35	-	-	-	-	-	-	-
West of Fordel	08/25/1999	FGL	325	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West of Fordel	09/08/1999	FGL	417	9.0	240	-	-	-	-	-	45	47	-	-	-	-	-	-	-
West of Fordel	09/22/1999	FGL	469	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West of Fordel	07/10/2000	FGL	354	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West of Fordel	08/25/2000	FGL	333	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West of Fordel	11/06/2000	FGL	494	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Etchegoinberry	07/08/1999	FGL	380	-	230	-	-	-	-	-	43	42	-	-	-	-	-	-	-
Etchegoinberry	07/21/1999	FGL	400	8.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Etchegoinberry	08/11/1999	FGL	364	-	230	-	-	-	-	-	38	40	-	-	-	-	-	-	-
Etchegoinberry	08/25/1999	FGL	372	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Etchegoinberry	09/08/1999	FGL	646	8.9	380	-	-	-	-	-	67	92	-	-	-	-	-	-	-
Etchegoinberry	09/22/1999	FGL	685	8.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Etchegoinberry	07/10/2000	FGL	471	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Etchegoinberry	08/25/2000	FGL	474	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Etchegoinberry	11/06/2000	FGL	507	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Whites Bridge	10/25/2000	FGL	721	8.4	442	4.0	25	14	100	4	64	104	130	<10	-	-	1.3	-	0.27
Whites Bridge	11/18/2000	FGL	502	7.7	314	2.5	22	12	59	3	42	73	100	<10	-	-	3	-	0.19
Whites Bridge	12/15/2000	FGL	801	7.7	484	4.6	25	15	118	4	71	128	120	<10	-	-	3.3	-	0.28
Whites Bridge	01/31/2001	FGL	853	7.8	540	4.3	29	17	119	4	94	139	130	<10	-	-	3.4	-	0.28
Whites Bridge	02/22/2001	FGL	682	7.8	430	2.7	31	17	76	4	85	89	120	<10	-	-	6.6	-	0.33
Whites Bridge	03/28/2001	FGL	670	7.9	440	3.1	29	15	83	4	94	87	120	<10	-	-	4.1	-	0.35
Whites Bridge	04/25/2001	FGL	772	8.2	490	4.0	28	14	103	4	104	96	140	<10	-	-	3.5	-	0.41
Mendota Wildlife Area	07/08/1999	FGL	513	8.0	310	2.8	19	9	60	2	55	68	110	<10	<10	90	2.9	<0.002	0.2
Mendota Wildlife Area	08/11/1999	FGL	633		360	3.9	18	9	82	2	71	90	130	<10	<10	100	1.6	<0.002	0.2
Mendota Wildlife Area	09/08/1999	FGL	920	9.0	530	6.4	21	10	142	3	89	148	110	20	<10	120	<0.4	<0.002	-
Mendota Wildlife Area	11/11/1999	FGL	716	9.2	440	3.7	24	13	90	3	77	97	140	<10	<10	110	2.7	<0.002	0.2
Mendota Wildlife Area	07/10/2000	FGL	706	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mendota Wildlife Area	08/25/2000	FGL	777	-	-	-	-	-	-	-	75	110	-	-	-	-	-	<0.01	0.2
Mendota Wildlife Area	11/18/2000	FGL	563	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lateral 6&7	08/25/1999	FGL	664	8.6	390	3.8	24	12	91	2	71	94	120	<10	<10	110	<0.4	<0.002	0.2
Lateral 6&7	09/29/1999	FGL	1160	-	670	-	-	-	-	-	116	192	-	-	-	-	<0.4	<0.01	0.2
Lateral 6&7	10/25/2000	FGL	735	8.5	474	4.0	28	14	105	3	68	105	150	<10	-	-	1.4	-	0.28
Lateral 6&7	11/18/2000	FGL	719	8.4	451	4.1	26	13	102	3	64	103	140	<10	-	-	<0.4	-	0.24
Lateral 6&7	12/15/2000	FGL	605	8.2	379	2.9	28	14	76	3	52	85	120	<10	-	-	1.3	-	0.22
Lateral 6&7	01/31/2001	FGL	742	7.8	480	3.9	27	14	100	4	73	133	130	<10	-	-	2.5	-	0.25
Lateral 6&7	02/22/2001	FGL	787	8.4	500	3.5	36	15	100	4	79	117	150	<10	-	-	1	-	0.27
Lateral 6&7	03/28/2001	FGL	680	8.4	450	2.9	33	16	80	4	84	91	140	<10	-	-	<0.4	-	0.32
Lateral 6&7	04/25/2001	FGL	718	8.5	480	4.5	27	9	106	6	49	87	190	<10	-	-	2.5	-	0.26
James ID (Booster Plant)	10/25/2000	FGL	836	8.2	537	5.2	26	13	131	3	83	131	150	<10	-	-	<0.4	-	0.34
James ID (Booster Plant)	11/18/2000	FGL	710	8.4	449	4.2	24	13	102	3	65	102	140	<10	-	-	<0.4	-	0.25
James ID (Booster Plant)	12/15/2000	FGL	848	8.2	533	6.0	21	10	133	3	84	122	160	<10	-	-	<0.4	-	0.38
James ID (Booster Plant)	01/31/2001	FGL	710	8.2	450	4.2	24	12	102	3	60	109	140	<10	-	-	<0.4	-	0.3
James ID (Booster Plant)	03/28/2001	FGL	805	8.6	510	4.1	30	15	110	4	90	131	110	20	-	-	1.4	-	0.35
James ID (Booster Plant)	04/25/2001	FGL	826	8.4	550	6.4	27	5	138	7	53	107	210	<10	-	-	4.5	-	0.37

1. Laboratory Abbreviations: FGL - Fruit Growers Laboratory, Santa Paula, CA; BSK - BSK Analytical Laboratories, Fresno, CA; USBR - U.S. Bureau of Reclamation, hydrolab field measurement (EC), selenium was analyzed by OBL - Olsen Biochemistry Lab, Brookings, SD

APPENDIX D

PRELIMINARY ANALYSES OF JULY, 2001 GROUNDWATER RESULTS FOR SELENIUM

Groundwater samples were collected in late June, 2001 in a total of 40 wells consisting of both MPG wells and wells on adjacent properties. Samples from all wells were sent to Olson Biochemistry Laboratory at the University of South Dakota for analysis of total selenium. Split samples from eight wells were also sent to Frontier Geosciences, Inc. in Seattle for speciation (determination of selenate and selenite) and analysis of total selenium. Olson Biochemistry Laboratory reported a detection limit of 0.4 µg/L for total selenium, whereas Frontier Geosciences reported a detection limit of 0.03 µg/L for total selenium. These detection limits are significantly lower than the detection limits reported for samples analyzed by other laboratories in 2000 and earlier.

Table D-1 summarizes the results of the groundwater analyses. Only two samples exceeded the detection limit reported by Olson Biochemistry Laboratory. These were the samples from Hansen Farms well 7C1 and Meyers Farming well S-3. In both cases, the analytical results from the two laboratories agreed closely. Whenever Olson Biochemistry Laboratory reported a sample as non-detect, the results provided by Frontier Geosciences was always below 0.4 µg/L. Based on these limited data, there is good agreement between these two laboratories.

The analysis described in Section 4.2.5.2, and summarized in Table 4-3, was repeated subsequent to the receipt of the above results. The revised analysis used actual MPG pumping volumes and DMC water delivery volumes for January through June 2001, and the June selenium concentrations. The results of this revised analysis are presented in Table D-2. Estimated selenium loads due to MPG pumping decreased from 45.8 kg for the year to 5.4 kg. In addition, because the selenium concentrations in the MPG wells were lower than those in the DMC, MPG pumping resulted in lower selenium concentrations in the Pool.

The laboratory reports from Olson Biochemistry Laboratory and Frontier Geosciences are included in this appendix.

Table D-1
Selenium Concentrations in Groundwater
Analyzed by Laboratories With Low Detection Limits

Well Owner	Well ID	Well Depth[1]	Sample Date	Se (µg/l) Olson[2]	Frontier[3]
Mendota Pool Group Production Wells					
Fordel, Inc.	M-1	D	06/28/2001	<0.4	
	M-2	S	06/28/2001	<0.4	
	M-3	S	06/28/2001	<0.4	
	M-6	S	06/28/2001	<0.4	
Terra Linda Farms	TL-4B	S	06/27/2001	0.4	
	TL-5	D	06/26/2001	<0.4	
	TL-7	D	06/26/2001	<0.4	
	TL-8	D	06/26/2001	<0.4	
	TL-13	S	06/26/2001	<0.4	
	TL-14	S	06/26/2001	<0.4	
	TL-15	S	06/26/2001	<0.4	
	TL-17	S	06/27/2001	<0.4	
Coelho/Coehlho/Fordel	CCF-1	D	06/26/2001	<0.4	
Silver Creek Packing Co.	SC-5	D	06/27/2001	<0.4	<0.03
	SC-6	D	06/26/2001	<0.4	
Coelho/Gardner/Hansen	CGH-1	S	06/26/2001	<0.4	
	CGH-3	S	06/26/2001	<0.4	
	CGH-6A	S	06/27/2001	<0.4	
	CGH-9	S	06/26/2001	<0.4	
	CGH-10	S	06/26/2001	<0.4	
	CGH-11	S	06/26/2001	<0.4	
Meyers Farming	MS-4	S	06/27/2001	<0.4	0.03
	MS-5	D	06/26/2001	<0.4	
Five Star Farms	FS-10	S	06/26/2001	<0.4	0.03
Coelho West Farms	CW-5	S	06/28/2001	<0.4	
Farmers Water District	R-11	D	06/25/2001	<0.4	
	R-1	D	06/25/2001	<0.4	
Baker Farming Co.	BF-2	D	06/25/2001	<0.4	
Panoche Creek Farms	PCF-1	D	06/25/2001	<0.4	
Other Wells					
City of Mendota	No. 4	D	06/27/2001	<0.4	<0.03
USGS	31J4	S	06/27/2001	<0.4	0.03
	31J5	D	06/27/2001	<0.4	0.06
Hansen Farms	7C1	D	06/27/2001	50.4	51.36

Well Owner	Well ID	Well Depth[1]	Sample Date	Se (µg/l) Olson[2]	Frontier[3]
Meyers Farming	**P-1**		06/27/2001	<0.4	
	S-3		06/27/2001	1.14	1.37
Newhall Land and Farming	**No. 53**		03/21/2000	<0.4	
			10/03/2000	<0.4	
			03/21/2001	<0.4	
	No. 74	D	03/21/2000	<0.4	
			10/03/2000	<0.4	
			03/21/2001	<0.4	
	No. 78	D	03/21/2000	<0.4	
			10/03/2000	<0.4	
			03/21/2001	<0.4	
	No. 94	D	03/21/2000	<0.4	
			10/03/2000	<0.4	
	No. 95	D	03/21/2000	<0.4	
			10/03/2000	<0.4	

1. S - Shallow well completed above A-Clay or equivalent depth (maximum depth = 130 ft).
   D - Deep well completed between A-Clay and Corcoran Clay (maximum depth = 500 ft).
2. OBL - Olson Biochemistry Laboratories, Brookings, SD
3. Frontier - Frontier Geosciences Inc., Seattle, WA

Table D-2.
Predicted Increase in Selenium Concentration in Fresno Slough Branch of Mendota Pool due to MPG Transfer Pumping in 2001. Incorporating data through June 2001.

Month	Inflow from:		Ambient Selenium:		Selenium Load from MPG Wells (kg)			Se Concentration Increment[4] (µg/L)	Total Se Concentration[5] (µg/L)
	North[1] (ac-ft)	MPG Wells[2] (ac-ft)	Concentration[3] (µg/L)	Load (kg)	Shallow Wells	Deep Wells	Total		
January	11,453	0	2.3	32.5	0.0	0.0	0.0	0.0	2.3
February	12,975	0	2.2	35.2	0.0	0.0	0.0	0.0	2.2
March	13,416	0	2.3	38.1	0.0	0.0	0.0	0.0	2.3
April	9,568	0	2.3	27.1	0.0	0.0	0.0	0.0	2.3
May	14,294	3,597	1.3	22.0	0.7	0.2	0.9	-0.2	1.0
June	26,972	3,212	1.1	36.6	0.7	0.1	0.8	-0.1	1.0
July	20,557	3,040	0.9	22.8	0.8	0.0	0.8	-0.1	0.8
August	16,282	3,040	0.2	4.0	0.8	0.0	0.8	0.0	0.2
September	14,431	3,111	0.9	16.0	0.7	0.1	0.8	-0.1	0.8
October	7,721	3,390	0.8	7.6	0.7	0.2	0.8	-0.2	0.6
November	8,842	2,296	1.2	13.1	0.5	0.1	0.6	-0.2	1.0
December	0	0	-	-	-	-	-	-	-
Total	**156,511**	**21,687**		**255.1**	**4.7**	**0.7**	**5.4**		
Mean			**1.4**						**1.3**

Frontier
Geosciences Inc.

Environmental Research & Specialty Analytical Laboratory
414 Pontius Ave N · Seattle WA 98109

July 5, 2001

Till Angermann
LSCE
500 1st Street
Woodland, CA 95695

Dear Till,

Enclosed are our results for eight selenium speciation samples collected on June 27, 2001 for your Mendota Pool project. The samples were received in good condition on June 29, 2001. The cooler temperature upon receipt was 15 °C, which was higher than the recommended holding temperature of 4 °C for speciation samples. The cooler was in transit for two days, though sent as "first overnight" package. Enclosed find the original airbill with FedEx barcode to enable refunds for not shipping as instructed.

All samples were filtered through a 0.2 µm filter and all eight samples were analyzed for Se(IV) and Se(VI) by ion chromatography-hydride generation-atomic fluorescence spectrometry (IC-HG-AFS). Total and dissolved total selenium was determined by hydride generation-atomic fluorescence spectrometry (HG-AFS).

The overall quality of the data looks very good. All quality control measurements are within established control limits, with the exception of the %RPD for the Se(IV) analysis. However, as the QC measurements were performed in a 20-fold diluted aliquot of the sample because of the high selenate concentration, the selenite concentration after dilution was about twice the MDL and therefore the high RPD is statistically not significant. The mean of the 20-fold diluted replicates for selenite matches exactly the result for selenite when analyzed undiluted as reported in the results table. All other RPDs were in control.

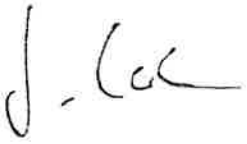
206 622 6960
fax 206 622 6870
email: info@Frontier.WA.com
www.FrontierGeosciences.com

The total and dissolved total selenium analyses by HG-AFS were not requested by you and you will not be charged for them. We performed these analyses to demonstrate how we usually conduct a complete selenium speciation analysis and what information you can derive from it. Six of the eight submitted samples are extremely low in selenium, and only one sample contains significant amounts of selenium in the form of selenate, which is normal for selenium problems caused by irrigation. Particulate selenium does not seem to be present in high concentrations, as there is no significant difference between the total and dissolved total selenium concentrations. Within the analytical error, all selenium in "Hansen" is truly dissolved selenium, whereas in the "Mendota S3" sample, selenium seems to be attached to colloids as the sum of the species does not match the dissolved total selenium concentration; colloidal Se species will be measured by the HG-AFS technique, but not by the IC-HG technique.

It was quite surprising that all but one sample were very low in selenium. This is different from the information we were given about the expected total selenium concentrations in the samples (2-4 ppb) and therefore you should compare these results critically to the total selenium results submitted to you by your routine lab. It is difficult to measure selenium accurately at low-ppb levels and a lot of analytical techniques tend to yield results that are biased high, thereby causing wrong and costly treatment decisions.

Please feel free to contact me if you have any questions or concerns. It has been a pleasure working for you, and I'm looking forward to more collaboration in the future.

Sincerely,



Jacqueline London
Project Manager
JaxL@frontier.wa.com

Selenium Speciation Results for LSCE- Till Angermann
Project: Mendota Pool

Reported July 5, 2001 - Jacqueline London
Frontier Geosciences Inc., 414 Pontius Ave. N, Seattle WA 98109

Sample Results

selenite selenate

Sample ID	Dissolved Se(IV)	Dissolved Se(VI)	Dissolved TSe	Total TSe
Hansen 7Cl	2.42	45.48	51.98	51.36
City of M. #4	<0.1	<0.07	<0.03	<0.03
SC-5	<0.1	<0.07	<0.03	<0.03
Meyers MS-4	<0.1	<0.07	<0.03	0.03
Mendota 31 J5	<0.1	<0.07	0.04	0.06
Mendota 31 J4	<0.1	<0.07	<0.03	0.03
Mendota S3	0.18	0.22	1.21	1.37
Mendota FS 10	<0.1	<0.07	<0.03	0.03

All results in µg/L

insoluble

Selenium Speciation Results for LSCE- Till Angermann
Project: Mendota Pool

Reported July 5, 2001 - Jacqueline London
Frontier Geosciences Inc., 414 Pontius Ave. N, Seattle WA 98109

Quality Control Data - Preparation Blank Report

Analyte (µg/L)	Blank 1	Blank 2	Blank 3	Blank 4	Mean	Std Dev	Est. MDL
Se(IV)	0.046	0.016	0.066	0.087	0.054	0.030	0.10
Se(VI)	0.026	0.062	0.078	0.056	0.056	0.022	0.07
TSe	0.025	0.024	0.009	0.020	0.020	0.007	0.03

Std Dev = Standard deviation
Est. MDL = Estimated method detection limit

Quality Control Data - Standard Reference Material Report

Analyte (µg/L)	SRM Identity	Cert. Value	Obs. Value	% Rec.
Se (IV)	CRM TMDW	10.00	10.38	103.8
TSe	NIST 1640	21.96	23.78	108.3
TSe	Selenomethionine	0.834	0.86	102.6

SRM Identity = Standard reference material identity
Cert. Value = Certified value (note: Se-methionine is not certified)
Obs. Value = Experimental result
% Rec. = Percent recovery

Selenium Speciation Results for LSCE- Till Angermann
Project: Mendota Pool

Reported July 5, 2001 - Jacqueline London
Frontier Geosciences Inc., 414 Pontius Ave. N, Seattle WA 98109

Quality Control Data - Duplicate Report

Analyte (µg/L)	Sample QC'd	Rep. 1	Rep. 2	Mean	RPD
Se(IV)	Hansen 7Cl	3.08	1.78	2.43	53*
Se(VI)	Hansen 7Cl	45.48	46.78	46.13	2.8
TSe	Mendota S3	1.37	1.38	1.37	1.1

N/C = Not calculated
* : RPD outside of Frontier's control limit of 25%, please see case narrative

Quality Control Data - Matrix Spike / Matrix Spike Duplicate Report

Analyte (µg/L)	Sample QC'd	Sample conc.	Spike Level	MS	% Rec.	MSD	% Rec.	RPD
Se(IV)	Hansen 7Cl	3.08	103.7	107.2	100.4	105.6	98.9	1.5
Se(VI)	Hansen 7Cl	45.48	108.3	151.8	98.2	154.1	100.3	1.5
TSe	Mendota S3	1.37	0.834	2.26	107.5	2.25	105.5	0.8

MS = matrix spike
MSD = matrix spike duplicate
RPD = relative percent difference

South Dakota State University

Oscar E. Olson Biochemistry Laboratories
Analytical Services Laboratory

Box 2170, Rm. 133 ASC
Brookings, SD 57007-1217
Telephone: (605) 688-6171
FAX: (605) 688-5295

Report of Analysis

LUHDORFF AND SCALMANINI,
500 FIRST ST.
WOODLAND, CA 95695

Reported: 07/11/2001
Received: 07/02/2001

01S-06572	WATER MENDOTA R-11	
Selenium, ug/L (ppb)		<0.40
01S-06573	WATER MENDOTA PCF-1	
Selenium, ug/L (ppb)		<0.40
01S-06574	WATER MENDOTA BF-2	
Selenium, ug/L (ppb)		<0.40
01S-06575	WATER MENDOTA R-1	
Selenium, ug/L (ppb)		<0.40
01S-06576	WATER MENDOTA CW-3	
Selenium, ug/L (ppb)		<0.40
01S-06577	WATER MENDOTA FS-10	
Selenium, ug/L (ppb)		<0.40
01S-06578	WATER MENDOTA CGH-11	
Selenium, ug/L (ppb)		<0.40
01S-06579	WATER MENDOTA CGH-9	
Selenium, ug/L (ppb)		<0.40

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WOODLAND, CA 95695

Reported: 07/11/2001
Received: 07/02/2001

01S-06580	WATER MENDOTA CGH-10	
Selenium, ug/L (ppb)		<0.40
01S-06581	WATER MENDOTA CGH-3	
Selenium, ug/L (ppb)		<0.40
01S-06582	WATER MENDOTA CGH-1	
Selenium, ug/L (ppb)		<0.40
01S-06583	WATER MENDOTA SC-6	
Selenium, ug/L (ppb)		<0.40
01S-06584	WATER MENDOTA TL-13	
Selenium, ug/L (ppb)		<0.40
01S-06585	WATER MENDOTA TL-14	
Selenium, ug/L (ppb)		<0.40
01S-06586	WATER MENDOTA TL-15	
Selenium, ug/L (ppb)		<0.40
01S-06587	WATER MENDOTA MS-5	
Selenium, ug/L (ppb)		<0.40

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WOODLAND, CA 95695

Reported: 07/11/2001
Received: 07/02/2001

01S-06588	WATER MENDOTA TL-5	
Selenium, ug/L (ppb)		<0.40
01S-06589	WATER MENDOTA TL-7	
Selenium, ug/L (ppb)		<0.40
01S-06590	WATER MENDOTA TL-8	
Selenium, ug/L (ppb)		<0.40
01S-06591	WATER MENDOTA CCF-1	
Selenium, ug/L (ppb)		<0.40
01S-06592	WATER MENDOTA 31-J5	
Selenium, ug/L (ppb)		<0.40
01S-06593	WATER MENDOTA 31-J4	
Selenium, ug/L (ppb)		<0.40
01S-06594	WATER MENDOTA S-3	
Selenium, ug/L (ppb)		1.14
01S-06595	WATER HANSEN 7C1	
Selenium, ug/L (ppb)		50.4

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Report of Analysis

LUHDORFF AND SCALMANINI,
500 FIRST ST.
WOODLAND, CA 95695

Reported: 07/11/2001
Received: 07/02/2001

01S-06596	WATER CITY OF M. NO. 4	
Selenium, ug/L (ppb)		<0.40
01S-06597	WATER TL - 17	
Selenium, ug/L (ppb)		<0.40
01S-06598	WATER TL - 4B	
Selenium, ug/L (ppb)		0.400
01S-06599	WATER SC - 5	
Selenium, ug/L (ppb)		<0.40
01S-06600	WATER MEYERS - MS - 4	
Selenium, ug/L (ppb)		<0.40
01S-06601	WATER FORDEL M-1	
Selenium, ug/L (ppb)		<0.40
01S-06602	WATER FORDEL M-2	
Selenium, ug/L (ppb)		<0.40
01S-06603	WATER FORDEL M-3	
Selenium, ug/L (ppb)		<0.40

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500 FIRST ST.
WOODLAND, CA 95695

Reported: 07/11/2001
Received: 07/02/2001

01S-06604	WATER FORDEL M-6	
Selenium, ug/L (ppb)		<0.40
01S-06605	WATER MEYERS P-1	
Selenium, ug/L (ppb)		<0.40
01S-06606	WATER MENDOTA CW-5	
Selenium, ug/L (ppb)		<0.40
01S-06607	WATER GGH GA	
Selenium, ug/L (ppb)		<0.40

< Means "less than"
ppb = parts per billion
We can also issue reports in Excel format. Please let us know if you would like the report that way.

Reviewed By: Lawrence Novotny

South Dakota State University

Olson Biochemistry Laboratories
Analytical Services Laboratories

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Report of Analysis

LUHDORFF AND SCALMANINI,
500 FIRST ST.
WOODLAND CA 95695

Reported: 07/13/01
Received: 07/02/01

Selenium **ug/L (ppb)**

Sample ID	Description	Rep. 1	Rep. 2	Average
01S-06596	WATER CITY OF M. NO. 4	<0.40	<0.40	<0.40
01S-06592	WATER MENDOTA 31-J5	<0.40	<0.40	<0.40
01S-06593	WATER MENDOTA 31-J4	<0.40	<0.40	<0.40
01S-06595	WATER HANSEN 7C1	49.6	51.2	50.4
01S-06601	WATER FORDEL M-1	<0.40	<0.40	<0.40
01S-06602	WATER FORDEL M-2	<0.40	<0.40	<0.40
01S-06603	WATER FORDEL M-3	<0.40	<0.40	<0.40
01S-06604	WATER FORDEL M-6	<0.40	<0.40	<0.40
01S-06598	WATER TL-4B	<0.40	0.803	0.40
01S-06588	WATER MENDOTA TL-5	<0.40	0.536	<0.40
01S-06589	WATER MENDOTA TL-7	<0.40	<0.40	<0.40
01S-06590	WATER MENDOTA TL-8	<0.40	<0.40	<0.40
01S-06584	WATER MENDOTA TL-13	<0.40	<0.40	<0.40
01S-06585	WATER MENDOTA TL-14	<0.40	<0.40	<0.40
01S-06586	WATER MENDOTA TL-15	<0.40	<0.40	<0.40
01S-06597	WATER TL-17	<0.40	<0.40	<0.40
01S-06591	WATER MENDOTA CCF-1	<0.40	<0.40	<0.40
01S-06599	WATER SC - 5	<0.40	<0.40	<0.40
01S-06583	WATER SC - 6	<0.40	<0.40	<0.40
01S-06582	WATER MENDOTA CGH-1	<0.40	<0.40	<0.40
01S-06581	WATER MENDOTA CGH-3	<0.40	<0.40	<0.40
01S-06607	WATER CGH-6A	<0.40	<0.40	<0.40
01S-06579	WATER MENDOTA CGH-9	<0.40	<0.40	<0.40
01S-06580	WATER MENDOTA CGH-10	<0.40	<0.40	<0.40
01S-06578	WATER MENDOTA CGH-11	<0.40	<0.40	<0.40
01S-06600	WATER MEYERS MS-4	<0.40	<0.40	<0.40
01S-06587	WATER MEYERS MS-5	<0.40	<0.40	<0.40
01S-06594	WATER MEYERS S-3	1.26	1.01	1.13
01S-06605	WATER MEYERS P-1	<0.40	<0.40	<0.40
01S-06577	WATER MENDOTA FS-10	<0.40	<0.40	<0.40
01S-06576	WATER MENDOTA CW-3	<0.40	<0.40	<0.40
01S-06606	WATER MENDOTA CW-5	<0.40	<0.40	<0.40
01S-06575	WATER MENDOTA R-1	<0.40	<0.40	<0.40
01S-06572	WATER MENDOTA R-11	<0.40	<0.40	<0.40
01S-06574	WATER MENDOTA BF-2	<0.40	<0.40	<0.40
01S-06573	WATER MENDOTA PCF-1	<0.40	<0.40	<0.40

Appendix E

Responses to Comments on the Draft Environmental Assessment

Introduction

This appendix provides responses to comments received from members of the public on the draft Environmental Assessment. Comments were received from the following entities:

- California Department of Fish and Game, San Joaquin Valley and Southern Sierra Region
- California Regional Water Quality Control Board, Central Valley Region
- City of Mendota, City Attorney
- County of Madera, Board of Supervisors
- Friant Water Users Authority
- Gravelly Ford Water District
- Madera Irrigation District

This appendix is organized as follows. Each comment letter is provided. Each comment in the letter was assigned a unique designation either by the commentator or by the respondent. Immediately following the comment letter, responses are provided for each comment. These responses are cross-referenced to the corresponding paragraph or comment in the letter.

Subsequent to the close of the comment period, Reclamation held an open house at their offices in Fresno California. The purpose of this open house was to present the findings of the draft EA and to clarify the scope and intent of the proposed project.

State of California - The Resources Agency
GRAY DAVIS, *Governor*

DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
SAN JOAQUIN VALLEY AND SOUTHERN SIERRA REGION
1234 East Shaw Avenue
Fresno, California 93710
(559) 243-4005, Extension 156

July 13, 2001

Ms. Judi Tapia
U. S. Bureau of Reclamation
South-Central California Area Office
1243 N Street
Fresno, California 93721-1831

Dear Ms. Tapia:

Draft Environmental Assessment
Mendota Pool 2001 Exchange Agreement
EA Number 01-24
State Clearing House Number 2001061104

(1) We have reviewed the subject Draft Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA), regarding the proposed underground-water pumping project at the Mendota Pool. The site is located at the junction of the Fresno Slough and the San Joaquin River in Fresno County. The Mendota Pool Pumpers (Pumpers) is a group of farmers that propose to pump underground water, from May 1 to November 15 into the Mendota Pool in exchange for water credits (up to 25,000 acre-feet) for Central Valley Project (CVP) waters within the Delta-Mendota Canal that will be delivered by the U.S. Bureau of Reclamation (Reclamation). The Pumpers plan to extract 12,000 acre-feet from deep wells and 19,000 acre-feet from shallow wells (<139 feet from the surface). The "credited" water will be delivered to water users to the north of the Mendota Pool via Check 13 of the Delta-Mendota Canal. The "pumped" underground water is more saline and has different constituent concentrations than surface waters within the Delta-Mendota/Mendota Pool/Fresno Slough system. This underground water could potentially degrade existing water quality within the Mendota Pool system, and the San Joaquin River below Mendota Dam.

(2) In addition to the Project described above, the Reclamation has prepared a Draft Environmental Assessment titled *2001 Approval of Temporary Contracts for Conveyance of Non-Project, Water in the Delta-Mendota Cana, EA Number 01-14* (SCH #200104401). The Delta-Mendota Canal is on the west side of the San Joaquin Valley and extends from the Delta Region near Tracy, California to the Mendota Pool in Fresno County. The San Luis & Delta-Mendota Water Authority (Authority) represents a group of water service districts who propose to pump an additional 30,000 acre-feet of underground water into the Delta-Mendota Canal to use as a storage and conveyance of non-Central Valley Project Water pursuant to the Warren Act.

(3) In April 2001, the San Luis Water District submitted to the Department of Fish and Game (Department) an Initial Study and Proposed Negative Declaration (California Environmental Quality Act - CEQA) for the "Meyers Farm Groundwater Banking Project." This Project would also result in the pumping of additional underground water into the Mendota Pool, presumably for further exchange or other purposes.

(4) Thus, the pumping of underground water into the Delta-Mendota Canal/Mendota Pool/Fresno Slough system by different entities under separate environmental review reports, appears to be occurring in a "piece-meal" fashion, which is inappropriate under the California Environmental Quality Act. The Department strongly recommends that Reclamation prepare an Environmental Impact Statement/Environmental Impact Report (EIS/EIR) that will address the direct, indirect and cumulative impacts of these three projects, plus impacts from other underground water pumping projects into this conveyance system. It is likely that the quality of CVP contract water delivered to its contractors and released to waters of the State will be diminished by this action. In addition, the quality of underground tile-drainage resulting from these CVP deliveries may also decline. Reclamation should evaluate and disclose any impacts and identify the responsible operating entities and the parties responsible for implementing, managing, and monitoring all necessary mitigation efforts.

<u>General Comments on the Mendota Pool 2001 Exchange Agreement:
(ref. SCH - 2001061104)</u>

(5) Inherent in the real-time management of water deliveries out of Mendota Pool, this project "may effect" a "defacto" exchange of Central Valley Project, Level 2 and Level 4 Refuge surface water supplies in the Fall to our Department lands for lessor quality groundwater. This is a very serious concern to the Department. Reclamation needs to identify who are the operating entities and the parties responsible for implementing, managing, monitoring, and any required mitigation.

(6) Mendota Pool is a "water of the State" comprised of both the San Joaquin River and the "Kings River North" (aka James Bypass). Water from Mendota Pool enters the San Joaquin River downstream where resident and anadromous fish are present in the San Joaquin River, and Mendota Pool. Migratory waterfowl and shorebirds, as well as resident wildlife, rely on this water as habitat. Recreational uses and harvest of fish and wildlife from this water occurs on an on-going and regular basis.

(7) The Delta-Mendota Canal and Mendota Pool/Fresno Slough is the only water conveyance system available for Reclamation to deliver CVP, Level 2 and Level 4 Refuge water supplies to the Mendota Wildlife Area (WA).

(8) The Department has a number of concerns regarding this proposed project and other similar projects, including, but not limited to:

- Degraded water quality and the distribution of impacts to aquatic, avian and terrestrial resources within the Mendota Pool/Fresno Slough.
- Degraded quality of our Refuge water supplies and related water quality impacts to wildlife habitats within the Department's Mendota WA.
- Subsidence of the Mendota Dam and levees that allow the Mendota Pool to function.
- Water delivery impacts, such as delivery schedules and volumes for Level 2 and 4 water supplies to the Mendota WA are assessed.
- Impacts to Public use and enjoyment are assessed.
- Real time water quality management "tools" be immediately defined and used in 2001.
- The increase in salts and other inorganic minerals discharged to the San Joaquin River be assessed.
- Formal agreement which is enforceable, and contains the operational and monitoring requirements and commitments for 2001 be negotiated and signed by parties (including the Department) relying on the waters of Mendota Pool.

(9) We acknowledge the potential benefits of enhancing CVP water yields through this one-year groundwater pumping project. However, the evidence suggests that a) there are many potential impacts to evaluate and disclose and if impacts are anticipated, they must be mitigated and b) many more projects similar to this project, are and will add additional groundwater to the CVP system. If this project is anticipated to extend beyond one year, the Department recommends the following component Plans and a comprehensive Program be defined in an Environmental Impact Statement (EIS) be developed and implemented to manage and monitor water quality in the Mendota Pool, the San Joaquin River and its distributaries. While we are willing to support approval of this one-year project under the EA (SCH 2001061104), we do so under the following conditions:

- A "Real Time" Water Quality Management and Implementation Plan that is comprehensible and can be implemented by "field level" personnel to manage and maintain water quality throughout the Mendota Pool system and affected area downstream. Management

actions such as halting pumping activity from certain wells should be anticipatory (i.e. "Yellow light actions") to minimize operational "bottlenecks," but maintain habitat protection and water quality.

- A comprehensive Water Quality Monitoring Plan.
- A Biotic Monitoring Plan.
- A Limnological Study Plan to identify the spacial and temporal distribution of physical and water quality characteristics in the water column throughout the Mendota Pool system under a range of hydrological conditions.
- A Mitigation Plan for impacts resulting from the extended/expanded project.

Thank you for the opportunity to review thi EA. Our specific comments are provided in Attachment 1. If you have any questions regarding these comments and need to schedule agreement negotiations, please contact Dr. Andrew Gordus, Environmental Specialis IV, Supervisor, at (559) 243-4014, extension 239, or contact me at the address or telephone number provided on this letterhead.

Sincerely,

for Dale Mitchell
W. E. Loudermilk
Regional Manager

Attachments

cc: See Next Page

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ATTACHMENT 1

Specific DFG Comments to Mendota Pool 2001 Exchange Agreement: Project (SCH 2001061104)

(A) Page 2-2 "Number 3" Paragraph. The first paragraph states that 12,850 acre-feet of underground water will be pumped between September 16 to November 21. These dates are outside the irrigation period, so how and where will this water be used? We have a serious concerns that a vast majority of our high-quality, Reclamation, Level 2 surface water that is normally delivered via the Delta-Mendota Canal and Mendota Pool will be exchanged for degraded saline underground water. Attached to this comment letter is a water delivery schedule for the Mendota WA (Table 1). Mendota WA plans to receive 12,400 acre-feet of Level 2 water from September to November. We have serious concerns that the 12,850 acre-feet of the pumped, saline water is intended for use on the wildlife area because we are the primary water user during these months. Pumping during the fall period should be reduced to allow more time for underground water recharge. It should be noted that Reclamation drains the Mendota Pool in late November for inspection and maintenance and no water supplies can be deliver during this draw down period.

(B) Page 3-9 First Paragraph. There are 11 water quality sampling points identified on Figure 3-1 and the text stated 12 points. The title for Figure 3-1 should indicate that the sampling locations were for the years 1999 and 2000. The letters "C" and "G", that identify the sampling locations are difficult to differentiate on this figure.

(C) Page 3-10 Section 3.2.3 Biological Resources. A review of the California Natural Diversity Data Base (CNDDB) indicated that State- and Federal-listed threatened or endangered species occur within or near the Project site including: the bank swallow (*Riparia riparia*), the western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), the Swainson's hawk (*Buteo swainsoni*), the Fresno kangaroo rat (*Dipodomys nitratoides exilis*), the blunt-nosed leopard lizard (*Gambelia sila*), the giant garter snake (*Thamnophis gigas*), and the palmate-bracted bird's -beak (*Cordylanthus palmatus*). Department Species of Special Concern also inhabit the area including: the western pond turtle (*Clemmys marmorta*), the white-faced ibis (*Plegadis chihi*), the burrowing owl (*Speotyto cunicularia*), and the tricolored blackbird (*Agelatus tricolor*). The EA should summarize the biological analysis from the Environmental Impact Report completed by Jones and Stokes (1995). Any potential impacts to State or Federal listed species, particularly the giant garter snake, should be addressed in this EA.

(D) Page 4-19 Section 4.2.6. As stated above, the EA should summarize the biological analysis from the Environmental Impact Report completed by Jones and Stokes (1995). The Department is not aware of any biological/toxicological sampling that has occurred before, during, or after any underground water pumping activities within the Mendota Pool. It is not clear as to what was considered the "baseline" for determining "no significant impacts" to the biological resources within the Mendota Pool/Fresno Slough complex. Because underground water pumping into the Mendota Pool has occurred for years, a biased result could occur that would identify "no significant impact" because the water system is under an elevated saline condition. An appropriate "baseline" would be before any underground water pumping occurred into the Mendota Pool or a comparison to a similar water system (control site) that does not receive underground saline water.

(E) Page 4-20 Section 4.2.6.2 First Paragraph. The term "limited habitat" needs to be substantiated. The Fresno Slough supports a viable, sustainable, fisheries such as black bass (*Micropterus* sp.), carp (*Cyprinus carpio*), crappie (*Pomoxis* sp.), bluegill (*Lepomis* sp.), catfish (*Ictalurus* sp.), Sacramento blackfish (*Orthodon microlepidotus*), Sacramento sucker (*Catostomus occidentalis*), hardhead (*Mylopharodon conocephalus*), and mosquitofish (*Gambusia* affinis). The slough also supports amphibians (i.e. frogs), reptiles (i.e. turtles), birds (i.e. ardeids, grebes, waterfowl), and mammals (i.e. raccoons, muskrats).

(F) Page 4-22 Last Bullet. Please refer to Comment Page 4-20.

(G) Page 4-24 Table 4-1. Please see the attached table for water quality objectives for water delivered to the Mendota WA (Table 2). The attached table includes target and unacceptable water quality criteria for waters within the Mendota Pool and for waters supplied to the Mendota WA.

(H) Appendix B Long Term Monitoring. We recommend that a quarterly biotic monitoring program be part of the monitoring program for this Project, particularly if this Project continues for more than one year. The biotic monitoring should include an "aquatic community assessment" pursuant to the Environmental Protection Agency (EPA) guidelines. Please see the attached table for recommended water quality monitoring programs for the Mendota Pool and Fresno Slough (Table 3). The Department recommends an intensive water quality monitoring program for the first few years to identify potential impacts and to provide information for the development of a "real time" water management program.

(I) We further recommend that all water monitoring results, in a tabular form, be submitted to Reclamation on a monthly basis. We recommend that all laboratory Quality Assurance/Quality Control (QA/QC) results be included as an attachment to the results. An annual monitoring report that describes all monitoring efforts and results should be required for this Project. The above Project monitor reporting recommendation is similar to the requirements for the Grasslands Bypass Project.

(J) Appendix B Surface Water Quality. We concur that the sampling locations just south of Whites Bridge and the James Bypass will provide information about water quality within Fresno Slough. To protect aquatic resources within Fresno Slough and Mendota WA water supply, we prefer a monitoring site be located near the Fresno Slough inlet area of Pump 3 at the south end of Mendota WA. This location is also near the inlet for Lateral 6 and will be more representative of the conditions within Fresno Slough's southerly end. The EA did not state clearly whether a continuous EC recorder will be installed south of Whites Bridge. As stated for Comment Page 3-9, the letters "C" and "G" are difficult the read.

(K) Appendix B Sediment Monitoring. We recommend that the sampling frequency be at least twice per year, once during the "pumping season" and once during the "non-pumping season".

(L) Appendix B Table B-3. As stated above, we recommend sediment sampling frequency to occur at least twice per year and a quarterly biological monitoring program be implemented should this project continue for more than one year. The continuous EC station locations should be listed in this table.

Table 1. U.S. Bureau of Reclamation water delivery schedule for Mendota Wildlife Area, 2001 to 2002. All deliveries are scheduled to be delivered via the Delta-Mendota Canal, Mendota Pool, Fresno Slough system.

	Central Valley Project Improvement Act Refuge Water Supply	
Month	Level 2 (acre-feet)	Level 4 (acre-feet)
March	500	
April	700	
May	2000	
June	2600	
July	2700	
August	2700	119
September	4900	119
October	5000	119
November	2500	119
December	1300	119
January	1332	119
February	1352	118
Total	27,584	951

Table 2. Water quality objectives for the Mendota Pool/Fresno Slough water delivery system to Mendota Wildlife Area. Please note that the following threshold values may change based on future State and Federal regulatory water quality objective requirements.

	Target Water Quality	Water Quality Needs Further Study	Unacceptable Water Quality
	No Effect	Level of Concern	Toxicity
Selenium (ug/l)[a]	<2	2 - 5	>5
Arsenic (ug/l)	<5	5 - 10	>10[b]
Boron (mg/l)	<0.3	0.3 - 0.6	>0.6[c]
Molybdenum (ug/l)	<10	10 - 19	>19[b]
Total Dissolved Solids (mg/l)[d]	<400	450 - 600	>800
Electrical Conductivity (umhos/cm)	<440[e]	400 - 700	>700 - 1,000[c]
Electrical Conductivity (umhos/cm)[f]	<704	777 - 994	>1,284

[a] Draft Environmental Impact Statement(EIS)/Environmental Impact Report (EIR), Grassland Bypass Project, 2001-2009 (Reclamation 2000).

[b] Preliminary Draft Water Quality Criteria for Refuge Water Supplies Title 34 PL 102-575 Section 3406 (d). 1995. The California Regional Water Quality Board Agriculture Water Quality Objectives for molybdenum is 10 ug/l (*A Compilation of Water Quality Goals*, Marshack 1998).

[c] Proposed California Regional Water Quality Board Boron and Salinity Objectives for Full Protection of Beneficial Uses in the Lower San Joaquin River at Vernalis. The California Regional Water Quality Board Agriculture Water Quality Objectives for boron is 0.70 to 0.75 mg/l (*A Compilation of Water Quality Goals*, Marshack 1998)

[d] Reclamation Water Contract Number 14-OC-200-7859A for Refuge Water Supplies to Mendota WA. The mean for 5 consecutive years shall not exceed 400 ppm TDS, the annual mean shall not exceed 450 ppm TDS, the monthly mean shall not exceed 600 ppm, and the daily mean shall not exceed 800 ppm TDS.

[e] Irrigation Water Quality Guidelines, Article 19 Water Quality Objective - monthly average (Department of Water Resources 1994).

[f] The EC values were calculated from the regression TDS= 0.6901EC - 86.306, where the TDS values were from the Reclamation Water Contract. This regression equation was analyzed from TDS and EC data points from the Mendota Pool monitoring program. (Pers. Comm. T. Donn, Ph.D., Entrix, Inc. 2001). All of the calculated EC values will need further study for the protection of the Mendota Pool/Fresno Slough water system.

Table 3. Recommended surface water quality monitoring program for the Mendota Pool and Fresno Slough water delivery system.

	Water	Sediments	Biota	Limnology Study
Arsenic	Monthly	Semi-annually	Quarterly	Study design to be determined at a later date.
Boron	Monthly	Semi-annually	Quarterly	
Molybdenum	Monthly	Semi-annually	Quarterly	
Selenium	Monthly	Semi-annually	Quarterly	
Minerals[1]	Quarterly	Semi-annually		
Total Dissolved Solids	Monthly			
Electrical Conductivity	Continuous			
pH	Monthly			
Flow Rate	Continuous			
Flow Direction at each station	Continuous			
Water Level	Continuous			

[1] Minerals to include: Major cations and anions sufficient for an ion balance and at least: Calcium, Carbonate, Bicarbonate, Chloride, Magnesium, Potassium, Sodium, Sulfate, Nitrate, and Nitrite.

Response to Comments from
California Department of Fish and Game,
San Joaquin Valley and Southern Sierra Region

Paragraph 1
Response: Comment noted.

Paragraph 2
Response: Comment noted.

Paragraph 3
Response: Comment noted.

Paragraph 4
Response: This EA is for a 1-year program, and evaluates the effects of that program on the water quality after delivery to the Mendota Pool via the Delta-Mendota Canal. All upstream effects on the Delta-Mendota Canal are therefore included as part of the baseline in the analysis. The analysis evaluates the incremental effect of the 1-year program on environmental resources, after all other upstream impacts have been incorporated. The EA has determined that the effects to water quality due to this program are less than significant.

The proposed pumping program is unlikely to significantly affect the San Joaquin River for the following reasons. The wells that have the poorest water quality are located along the southern portion of the Fresno Slough. During the pumping season, flow in the Fresno Slough is to the south. Should the flow in the Fresno Slough reverse, pumping would be stopped. Water quality in the Mendota Pool Group wells located in Farmers Water District that pump into the San Joaquin River arm of the Pool, is generally better than water in the DMC. The intakes for the Exchange Contractors canals are located in the northern portion of the Pool; therefore pumping into the southern portion of the Pool would not affect the quality of water at the Exchange Contractors' intakes. During the irrigation season only a small portion of the water in the northern portion of the Pool is released over Mendota Dam; this water is then diverted at Sack Dam.

The EA has evaluated the effects of the Mendota Pool Group pumping on water quality delivered to users in the southern end of the Pool. The quality of the water delivered meets applicable irrigation water quality standards.

Farmers who receive water deliveries from the southern portion of the Pool generally practice water conservation measures including reuse of tail waters and sequestering drain waters in evaporation basins. The Mendota Wildlife Area releases its water back to the Mendota Pool at the end of the winter when it is no longer needed to provide waterfowl habitat. Therefore, releases to waters of the State from users to the south of the Pool would be minimal.

The Mendota Pool Group, and the Exchange Contractors and Newhall Land and Farming have contracted with LSCE and KDSA to design and implement the monitoring program. The San Luis Delta-Mendota Water Authority is responsible for maintaining the volume of water in the Pool and balancing supply via the Delta Mendota Canal and delivery to users. The San Luis Delta-Mendota Water Authority reads the meters on the pumps on a weekly basis and monitors flows into and out of the Pool.

General Comments

Paragraph 5
Response: There will be some degradation in the water quality in the Mendota Pool due to Mendota Pool Group pumping. However, this reduction in water quality is considered to be small and the water will still comply with applicable water quality standards for irrigation water, and will meet the refuge water supply criteria (Section 4.2.5 and Tables 4-2 and 4-3). The Mendota Pool Group, and the Exchange Contractors and Newhall Land and Farming have contracted with LSCE and KDSA to design and implement the monitoring program. The 2001 monitoring program design is provided as Appendix B to the EA. The San Luis Delta-Mendota Water Authority is responsible for maintaining the volume of water in the Pool and balancing supply via the Delta Mendota Canal and delivery to users.

Paragraph 6
Response: Comment noted.

Paragraph 7
Response: Comment noted. See response to Paragraph 5, above.

Paragraph 8
Response: We recognize the Department's concerns regarding the water quality impacts and their potential effects in the Mendota WA. The EA addresses the surface water quality issues in Section 4.2.5 relative to Mendota Pool and the Mendota Wildlife Area. Subsidence effects are discussed in Section 4.2.3. Water delivery schedules will not be impacted by this project. A groundwater and surface water monitoring program has been conducted since 1999. The monitoring program for 2001 is provided in Appendix B to the EA. The 2001 monitoring program has been reviewed by Dr. A. Gordus of the Department.

The 2001 pumping program does not result in any direct releases to the San Joaquin River.

Paragraph 9
Response: This EA is for a 1-year pumping program. A comprehensive groundwater, surface water, and sediment monitoring program for 2001 has been designed and is provided in Appendix B to the EA. A draft of the monitoring program was provided to the Department on May 24. Dr. A. Gordus (Department) and Dr. T. Donn (ENTRIX,

Inc.) discussed this monitoring program on June 1, 2001 and reached an agreement on the monitoring to be conducted in 2001.

Monthly surface water monitoring during 2001 should provide sufficient data to evaluate impacts of Mendota Pool Group pumping on surface water delivered to the Mendota Wildlife Area.

The Department requested that a biological monitoring program be conducted. After discussion, it was agreed that a biological monitoring program would not be implemented during the 2001 season. Rather, the potential for bioaccumulation of the target metals would be evaluated. If water or sediment concentrations reach levels that are considered to pose a risk to biota through bioaccumulation in food sources, a biological monitoring program would be implemented.

Section 2.2.2 of the EA defines the constraints under which the pumping program was designed and will be implemented. Mitigation of potential impacts was included in the design of the pumping program. Potential impacts that were mitigated for include groundwater drawdown, subsidence, and water quality.

Specific Comments

Paragraph A

Response: Water pumped between September 16 and November 21 will be exchanged with Reclamation for water from the DMC. A portion of this water is likely to be used by the Mendota Wildlife Area. The analyses presented in Section 4.2.5 of the report indicate that selenium and TDS concentrations (Tables 4-3 and 4-4) in Pool water are expected to meet applicable water quality standards.

Central California Irrigation District owns and operates the Mendota Dam. The San Luis and Delta-Mendota Water Authority is responsible for scheduling deliveries via the Delta-Mendota Canal to meet the needs of users extracting water from the Pool. Reclamation does not have any authority over the operation or maintenance of the Dam.

In June 2001, water samples were collected from 36 wells, including 31 Mendota Pool Group water supply wells, as part of the monitoring program (see Appendix D). With one exception (well TL-4B, Se = 0.4 µg/L), the selenium concentrations in all Mendota Pool Group wells were below the limit of detection (0.4 µg/L). Reevaluation of the selenium loading calculations using the more recent data indicates that the annual selenium load to the pool would be approximately 8.5 kg. In fact, selenium concentrations in the Pool are expected to decrease to an annual average of 1 µg/L due to pumping of the Mendota Pool Group wells.

Paragraph B
Response: The comment is correct. The missing point is located at the James Irrigation District Booster Plant, located in the south-east corner of Figure 3-1. It was inadvertently cropped from the figure (see Figure B-3).

Paragraph C
Response: These species are identified in Section 3.2.3. Impacts to these species are discussed in Section 6 of the draft EIR (Jones and Stokes, 1995). No impacts to biological resources were identified in the draft EIR. The evaluation provided in the EIR is summarized in Section 4.2.6 of the EA. Based on the analyses presented in this EA, there are no potential impacts to any listed species.

Paragraph D
Response: The results of the analyses conducted for the EIR (Jones and Stokes, 1995) relative to impacts on biological resources are summarized in Section 4.2.6 of the EA. An EA is supposed to summarize existing data and information; generally new data are not generated for an EA. We did not identify any reports that detailed the results of tissue burden analyses, or toxicity testing of Mendota Pool biota. No exceedances of water quality objectives for the protection of aquatic life or waterfowl were identified in this analysis.

Paragraph E
Response: In the area of the Pool north of Whitesbridge Road, farmed land extends nearly to the edge of the Pool. In addition, the Pool is generally drained on a biennial frequency, thereby eliminating habitat for aquatic species for a 1 to 2 month period.

Paragraph F
Response: No exceedances of water quality objectives for the protection of aquatic life or waterfowl were identified in this analysis. The EIR did not identify any adverse impacts to wildlife or aquatic resources due to the pumping of 78,000 acre-feet of water annually. The proposed pumping program would pump a maximum of 31,000 acre-feet in 2001, hence any impacts would be less.

Paragraph G
Response: The analyses presented for selenium indicate that the requested standard has been met historically (Table 3-4) and will continue to be met in 2001 (Table 4-3). Similar analyses for TDS indicate that in 2001 TDS concentrations will meet the stated standard, and average approximately 385 mg/L (equivalent to an EC of 680 μmhos/cm) (Table 4-4). Data are not yet available to assess whether arsenic and molybdenum concentrations in surface water meet the proposed standards.

Paragraph H
Response: This EA is for a 1-year program. The monitoring program is provided in Appendix B to the EA. The monitoring program consists of groundwater level measurements on a bimonthly basis, groundwater and surface water quality

measurements in June and October, continuous EC measurements at 6 locations, and sediment quality sampling during summer 2001 and spring 2002.

The Department's request that a biological monitoring program be conducted was discussed with Dr. Gordus of the Department. It was agreed that a biological monitoring program would not be implemented during the 2001 season. Rather, the potential for bioaccumulation of the target metals would be evaluated, and screening criteria for water would be developed. If water or sediment concentrations reach levels that are considered to pose a risk to biota through bioaccumulation in food sources, a biological monitoring program would be recommended for any future pumping program.

Paragraph I
Response: The Mendota Pool Group currently produces an annual monitoring report detailing the results of the previous years monitoring efforts. The Mendota Pool Group will provide the results of each monitoring survey to Reclamation.

Paragraph J
Response: The monitoring program includes a surface water sampling location on the James Bypass at the James Irrigation District Booster Plant. This station will provide information on the quality of water entering the southern end of the Pool from sources other than Mendota Pool Group pumping. The sampling location south of Whitesbridge Road will provide information on the quality of the water entering the Mendota Wildlife Area after it has mixed with Mendota Pool Group inputs. The Department's proposed location would not provide any additional information on the influence of Mendota Pool Group pumping.

The Mendota Pool Group intends to install the requested continuous EC recorder before the start of the 2002 irrigation season.

Paragraph K
Response: Sediments will be sampled in August 2001 (pumping season) and subsequently during the spring (non-pumping season) and fall of 2002. Should there be little change in the sediment quality, the sediment sampling program could be reduced to an annual basis, with sampling occurring in October of each year.

Paragraph L
Response: Please see the responses to Paragraphs H and L, above. Table B-4 identifies the locations of the continuous EC recorders.

California Regional Water Quality Control Board

Central Valley Region

Robert Schneider, Chair

Winston H. Hickox
Secretary for Environmental Protection

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Gray Davis
Governor

13 July 2001

Ms. Judi Tapia
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COMMENTS ON THE DRAFT ENVIRONMENTAL ASSESSMENT FOR THE MENDOTA POOL 2001 EXCHANGE AGREEMENT, EA NUMBER 01-24

(1) Staff has reviewed the *Draft Environmental Assessment for the Mendota Pool 2001 Exchange Agreement, EA Number 01-24*. We continue to be concerned that the proposed groundwater pumping has the potential for adding salt, boron, and selenium to the San Joaquin River. Following are some general and specific comments regarding this EA.

General Comments

(2) The Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan) lists the following beneficial uses for waters of the San Joaquin River in the vicinity of the project area: municipal, agricultural and industrial supply; water contact and non-water contact recreation; warm and cold freshwater habitat; wildlife habitat; and spawning. We point out these beneficial uses to emphasize that, while agricultural supply is a beneficial use (and the goal of this project), adverse effects to downstream beneficial uses need to be considered and protected, especially with regard to the project's adverse effects on other agricultural uses, municipal supplies, and wildlife.

(3) Staff has submitted previous comments (18 December 1998 and 15 November 1995) to the Westlands Water District on related environmental documents. The Bureau has made significant efforts to incorporate mitigation in the proposed project to reduce potential impacts to water quality and the beneficial uses of water. Mitigation measures include reducing the average volume of water pumped from 78,000 acre-feet to 31,000 acre-feet per year. However, impacts to water quality from the proposed project still remain an issue of concern.

(4) As stated in our previous comments, the antidegradation directives of State Water Board Resolution No. 68-16 require that high quality waters of the state be maintained "consistent with the maximum benefit to the people of the state." The degradation of ground and surface water associated with this project seems to be inconsistent with State Water Board Resolution No. 68-16. Furthermore, the San Joaquin River is listed as "water quality limited" under Section 303(d) of the Clean Water Act for multiple stressors including selenium, electrical conductivity (EC), and boron. Regional Board staff is currently developing Total Maximum Daily Loads (TMDLs) for pollutants in the San Joaquin River downstream

of the Mendota Pool. The TMDLs will include an allocation of selenium, salt, and boron loads for pollutant sources in the watershed. Any additional loads into the system, above and beyond the current loads, will result in smaller allowable load allocations available to the existing dischargers or violation of existing water quality standards. It appears that the proposed project will ultimately result in a net increase of salinity in the Mendota Pool and the San Joaquin River, as poorer quality water is essentially be exchanged for higher quality water.

(5) The EA does not acknowledge the San Joaquin River's status as an "impaired" water body, nor does it evaluate the impact of incremental increases in TDS, boron, and selenium loading to the San Joaquin River caused by the project. Small increases of salt and boron loads in supply water delivered to agricultural areas that drain to the SJR will limit the ability of these areas to discharge agricultural drainage. No provision will be made, in the TMDLs currently being developed, for an additional load allocation to account for degraded supply water resulting from groundwater pumping. Incremental increases in loads will be the responsibility of the entity contributing these additional loads to the SJR.

Specific Comments

1) The EA (p. 4-16) indicates that "*total selenium inputs to the pool due to MPG transfer pumping over the 6½ -month pumping period are estimated to be 45.8 kg...TDS inputs from MPG pumping total 27,000 tons*". The source analysis component of the salt and boron TMDL indicates that 27,000 tons of salt represents approximately 2.5 percent of the annual salt load mass emissions from the San Joaquin River Basin. An analysis of the mass of selenium, salt, and boron being removed at Check 13 compared to the total amount of selenium, salt, and boron being imported from groundwater should be included in your review. The total net difference in salt, boron and selenium loads both into the Mendota pool and discharged into the San Joaquin River basin (canal intakes and SJR outflow) should be evaluated for pre and post project conditions. No net gain of selenium, salt, and boron loads should occur as a result of the proposed project.

2) Regarding the potential for the project to result in exceedences of water quality standards, the EA states (p.4-18) that "*since the water delivered to the users meets the applicable water quality standards, this impact is less than significant.*" While the proposed project may not cause water quality exceedences at the irrigators' points of diversion, any incremental increases in constituent concentrations may jeopardize the irrigators' ability to meet future and existing pollutant load allocations. Additionally, any incremental increases in constituent concentrations will reduce the total assimilative capacity of the San Joaquin River. The project's impact on attainment of water quality standards must be addressed for the entire system, not just at the points of water delivery.

3) The EA (Table 4-24) identifies the critical year (low) flow boron Water Quality Objective (1.3 mg/L) as a "relevant water quality screening benchmark". This critical year objective is only relevant during a critical water-year. The objectives for non-critical water years are 0.8 mg/L (mean) and 2.0 mg/L (max.) for 15 March through 15 September, and 1.0 mg/L (mean) and 2.6 mg/L (max) 16 September through 14 March.

4) The EA describes (pgs. 4-14 and 4-15) a water budget that was conducted to ascertain the direction of flow in the Mendota Pool and determine whether surface water impacts could be expected at water intakes as result of the project. The EA acknowledges that "slight" impacts could occur at the CCID Outside Canal and at the Firebaugh intake canal under certain flow conditions. These "slight impacts" should be clearly defined and quantified. The EA also states that impacts are also possible at the Columbia Canal Intake when FWD wells are pumping into the San Joaquin River branch of the pool. To avoid these potential impacts, the Mendota Pool Group (MPG) will cease pumping the Farmers Water District (FWD) wells when flows in the San Joaquin River are to the north or when EC concentrations at the water intakes exceed concentrations in the DMC by 90 µS/cm. However, its not clear how the MPG will know when the Mendota Pool is flowing to the north or what mechanism exits to monitor Mendota Pool flow and respond accordingly. Additionally, allowing up to a 90µS/cm increase in EC at the intakes still allows additional salt loading to the Lower San Joaquin River Basin.

5) The minimum detection limits for selenium analyses contained in tables 3-1, 3-2, and 3-4 of the EA are highly variable (ranging from 0.4 to 10µg/L) and make data interpretation difficult. The proposed monitoring program should use consistent minimum detection limits.

6) Table 4-3 of the EA presents the predicted increases in selenium concentration in the Fresno Slough branch of the Mendota Pool. However, it is not clear from the table what flow and concentration values were used to calculate loads from the deep and shallow Ground water wells.

If you have any questions regarding this matter please contact me at (916) 255-3234 or oppenhe@rb5s.swrcb.ca.gov.

ERIC I OPPENHEIMER
Environmental Specialist
San Joaquin River TMDL Unit

Enclosures: 18 December 1998 and 15 November 1995 comments to Westlands Water District

Peter M. Rooney
Secretary for
Environmental
Protection

Central Valley Region

Fresno Branch Office
Internet Address: http://www.swrcb.ca.gov/~rwqcb5
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Alt

Ed J. Schnabel
Chair

Mr. Marc J. Carpenter
Westlands Water District
P.O. Box 6056
Fresno, CA 93703-6056

18 December 1998

FEIR FOR CONVEYANCE OF NONPROJECT GROUNDWATER FROM THE MENDOTA POOL AREA USING THE CALIFORNIA AQUEDUCT, WESTLANDS WATER DISTRICT, FRESNO COUNTY

We have reviewed the revised Final Environmental Impact Report (FEIR) entitled *Conveyance of Nonproject Groundwater from the Mendota Pool Area Using the California Aqueduct.* The attached memorandum contains our comments and concerns for the proposed project. Specifically, we are concerned that there is a potential for adding salts to the San Joaquin River and that individual wells will degrade the Fresno Slough. The FEIR proposes mitigation measures for water quality impacts and a Mitigation Monitoring Program. Please keep us informed on the success of the mitigation measures by submitting the following items:

1) Results of the mitigation monitoring program model for review and analysis.
2) A copy of the annual report from the Mendota Pool Group when available for review and comment.
3) A copy of a memorandum of understanding or memorandum of agreement between the Mendota Pool Group and WWD which requires the Mendota Pool Group to implement mitigation measures and conditions of the adopted ground water management plan.
4) A copy of the operational agreement of the Mendota Pool Group and specific water quality standards for adding and deleting wells from the project.
5) A copy of Resolution Nos. 118-98 and 119-98, when the resolutions are signed and finalized.

If you have any questions on this matter, please e-mail or telephone Anthony Toto at totoa@rb5f.swrcb.ca.gov or (559) 445-6278.

LONNIE M. WASS
Senior Engineer
RCE No. 38917

ALT

Enclosure

cc: John Bryner, Mendota Pool Group, Fresno
Douglas Brewer, Jones & Stokes Associates, Inc., Sacramento
Joseph Scalmanini, Luhdorff & Scalmanini, Woodland

Central Valley Region

Peter M. Rooney
Secretary for Environmental Protection

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Ed J. Schnabel
Chair

TO: Lonnie M. Wass
Senior Engineer
RCE No. 38917

FROM: Anthony L. Toto
Associate WRC Engineer
RCE No. 51210

DATE: 18 December 1998

SIGNATURE:

SUBJECT: ***FEIR for Conveyance of Nonproject Groundwater from the Mendota Pool Area Using the California Aqueduct, Westlands Water District, Fresno County***

I have reviewed the Final Environmental Impact Report (FEIR) entitled *Conveyance of Nonproject Groundwater from the Mendota Pool Area Using the California Aqueduct*. The purpose of the project is to provide water to irrigable lands in Westlands Water District (WWD). In response to comments on the Draft EIR, WWD is proposing to approve the project with the addition of three mitigation measures:

1) decrease the annual project pumpage to an average of 31,000 acre-feet per year,
2) maintain average annual water quality at the Exchange Contractors' intake at a level that is at least as good as it would be in the absence of the mitigated project, and
3) eliminate the introduction of nonproject groundwater from the project into the California Aqueduct.

General Comments

The San Joaquin River, as a water quality limited segment, is subject to stringent salinity standards. There must not be any salts added to the San Joaquin River through the Mendota Pool. Currently a review of the San Joaquin River and total maximum daily load with load allocations is being developed.

The water quality in the Fresno Slough south of the Main Lift Canal will be degraded by the discharge of project wells with high salts. The degradation of the Fresno Slough is not consistent with the Water Quality Control Plan for the Tulare Lake Basin or the state's policy with respect to maintaining high quality of waters in California.

Specific Comments

1) The FEIR on page 25 and 26 describes a mitigation monitoring program to ensure water quality in the Mendota Pool is at least as good as it would be without the project. Water quality data from the U.S. Bureau of Reclamation of the Delta Mendota Canal and from the Exchange Contractors is combined in a mass-balance model of the Mendota Pool to determine any impact on water quality. The results of such modeling will be used to adjust pumpage and, upon request, will be made available for review and analysis.

   The Regional Board should request a copy of the results of the modeling for review and analysis.

2) The FEIR, on page 27, indicates that the project proponents (Mendota Pool Group) will prepare an annual report containing data and evaluating impacts of the Mitigated Project.

The Regional Board should request a copy of the annual report for review and comment.

3) Although WWD has adopted a groundwater management plan under AB3030, the project proponents are not within WWD.

The Regional Board should request a copy of a memorandum of understanding or memorandum of agreement between the project proponents (Mendota Pool Group) and WWD which require the project proponents to implement mitigation measures and conditions of the adopted ground water management plan.

4) The Mendota Pool group operates under an agreement among its Members which specifies that they must meet water quality standards and must pay for any needed environmental analysis.

The Regional Board should request a copy of this agreement. The water quality standards that must be met to join the Mendota Pool group should be enumerated and the water quality standards which require a well to be eliminated from the group should be enumerated. The following table illustrates that wells with an EC above 2,200 µmhos/cm are not necessary for the mitigated project since the total annual project pumpage is 31,000 acre-feet per year.

	Cl	EC	TDS	SO4	Ac-ft/yr
Flow-Weight AVG all wells	269	1,386	806	131	61,685
Flow-Weight AVG < 2,200	187	1,159	692	117	50,881
Flow-Weight AVG < 1,000	121	830	513	83	25,185

5) On 14 December 1998, the WWD Board adopted Resolution No. 118-98 which certified the FEIR. The WWD Board also adopted Resolution No. 119-98 regarding the agreement between the Mendota Pool Group and WWD for the conveyance of groundwater.

The Regional Board should request a copies of these resolutions.

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD • CENTRAL VALLEY REGION

3614 East Ashlan Ave.
Fresno, CA 93726

Phone: (209) 445-5116
CALNET: 8-421-5116

TO: Chris Belsky
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

FROM: Lonnie M. Wass
Senior Engineer

DATE: 15 November 1995

SIGNATURE: Lonnie M. Wass

SUBJECT: *DEIR for Conveyance of Nonproject Groundwater from the Mendota Pool Area using the California Aqueduct, Westlands Water District, SCH#94082069*

We have reviewed the Draft Environmental Impact Report (DEIR) entitled, *Conveyance of Nonproject Groundwater from the Mendota Pool Area Using the California Aqueduct*. The purpose of the project is to provide water to irrigable lands in Westlands Water District (WWD) to offset cutbacks in WWD water supplies attributable to drought, the Central Valley Project Improvement Act, the Endangered Species Act, and new Delta water quality rules. The proposed project entails annually pumping and conveying between 54,000 and 78,000 acre-feet of ground water, depending on the condition of the Lateral 7 pump station.

GENERAL COMMENTS

The antidegradation directives of State Water Board Resolution No. 68-16 require that high quality waters of the State be maintained "consistent with the maximum benefit to the people of the State." The DEIR recognizes that even with mitigation measures as recommended, the project will still have significant unavoidable impacts on ground water. The DEIR states that the increase in salinity in surface water is a less than significant impact because drinking water standards are not exceeded. Any salts added to the Mendota Pool that flow out the San Joaquin River, decrease the assimilative capacity of the river to receive drainage discharge and still meet water quality objectives. In addition to drinking water standards, the antidegradation policy must be considered. The degradation of ground water and surface water associated with this project seems inconsistent with the antidegradation policy.

The Water Quality Control Plan for the Tulare Lake Basin contains effluent limits for various waste discharges (e.g., subsurface agricultural drainage, municipal and domestic wastewater) to surface waters. The effluent limits for electrical conductivity and chloride are 1,000 µmhos/cm and 175 mg/l, respectively. Some of the ground water discharged for reuse in the proposed project exceeds these limits.

The DEIR identifies implementation of a ground water program under AB 3030 as a measure to minimize cumulative ground water overdraft and other significant impacts of the project. The WWD has begun the process of developing a ground water management program under the auspices of AB 3030, but a time line on when such a plan will be completed is not given. The reference of a future plan as a mitigation measure without a definitive time frame for completion cannot be considered mitigation.

SPECIFIC COMMENTS

1) The DEIR makes numerous references to WWD Laterals 6 and 7, SWP Checks 13 and 21, SWP Pool 16, and DMC Checks 20 and 21, but the locations are not specifically given. Figures 4-32 and 7-2 appear to depict Laterals 6 and 7, but are not labeled as such. Figure 5-1 is of sufficient scale to include the locations of WWD Laterals 6 and 7, SWP Checks 13 and 21, SWP Pool 16, and DMC Checks 20 and 21, but does not. Figure 5-2 could include a close-up of DMC Check 20 and 21.

2) Table 5-6b should include method detection levels for constituents that were not detected, specifically nitrate, arsenic, manganese, and selenium. The statistics at the bottom of the table should separate Farmers WD 1&2, Farmers WD 2&3, and PFC/FWD, since these three are only included in Element 1 of the Mendota Pool Mass-Balance Spreadsheet Model.

3) Table 5-7 should include an additional column for the total annual maximum flows.

4) Table 5-8 contains the flow-weighted concentrations of Mendota Pool Group Wells. The normal average should only include the wells that are part of Element 2 of the Mendota Pool Mass-Balance Spreadsheet Model. The methodology of calculating the flow-weighted concentrations needs to be explained. Using the data from Tables 5-6b (well concentrations) and 5-7 (maximum well pump capacity), and assuming the flow-weighted average equals the individual well annual flow (Q well) divided by the total flow of the Mendota Pool Group (QMPG) times the constituent concentration, we cannot replicate the values for the flow weighted concentrations in Table 5-8. Discrepancies that alerted us to this included comparing well MAR-1 to well SC-3&7. The flow for MAR-1 is 2,117 acre-feet and chloride concentration is 450 mg/l for a flow-weighted chloride concentration of 23.0 mg/l, according to Table 5-8. The flow for SC-3&7 is 3,139 acre-feet and chloride concentration is 650 mg/l, yet the flow-weighted average chloride concentration, according to Table 5-8, is only 7.6 mg/l. How can a well with a higher concentration and higher flow rate have a lower flow-weighted concentration? All of the values in Table 5-8 were reviewed and we arrived at the following flow-weighted averages:

	Chloride (mg/l)	Electrical Conductivity (µmhos/cm)	Total Dissolved Solids (mg/l)	Sulfate (mg/l)
Flow-weighted Avg.	268.6	1,386.1	805.6	130.6
Table 5-8	212.2	1,263.6	749.3	123.5

5) Tables 5-9, 5-10, and 5-11 all use maximum well flows rather than actual. Is this a conservative worst case estimate?

6) Mitigation Measure 5-1 on page 5-74 indicates that wells are ranked by TDS, sulfate, and chloride concentrations. The well ranking list will be used when water quality standards are being approached. Owners of wells with higher concentrations will be instructed by WWD to curtail pumping when water quality standards are being approached. WWD will provide

monthly reports to DWR Operations and Maintenance during periods when the program is operational. The term "approach" is vague and subject to debate. Perhaps a specific percentage of the water quality standard should be used rather than the term "approach".

Should you have questions concerning these comments. please phone Anthony Toto at (209) 445-6278.

cc: Marc Carpenter. Westlands Water District. Fresno
Nadell Gayou. Department of Water Resources. Sacramento

Response to Comments from
California Regional Water Quality Control Board
Central Valley Region

Paragraph 1
Response: The proposed pumping program is unlikely to significantly add to the salt, boron, or selenium loads of the San Joaquin River for the following reasons. The wells that have the highest salt concentrations are located along the southern portion of the Fresno Slough. During the pumping season, flow in the Fresno Slough is to the south. Should the flow direction in the Fresno Slough reverse, pumping would be stopped. Water quality in the Mendota Pool Group wells located in Farmers Water District, which pump into the San Joaquin River arm of the Pool, is generally better than water in the Delta-Mendota Canal. The intakes for the Exchange Contractors' canals are located in the northern portion of the Pool; therefore pumping into the southern portion of the Slough would not influence the quality of water at the Exchange Contractors' intakes. Only a small portion of the water in the northern portion of the Pool is released over Mendota Dam; this water is then diverted at Sack Dam.

Farmers who receive water deliveries from the southern portion of the Pool generally practice water conservation measures including reuse of tail waters and sequestering drain waters in evaporation basins. The Mendota Wildlife Area releases its water back to the Mendota Pool at the end of the winter when it is no longer needed to provide waterfowl habitat.

General Comments

Paragraph 2
Response: Comment noted.

Paragraph 3
Response: Comment noted.

Paragraph 4
Response: Because of the mitigation measures incorporated in the design of the pumping program, impacts at the Exchange Contractors' canal intakes are prevented. Therefore, impacts to the San Joaquin River are also prevented (see response to Paragraph 1, above). Reclamation is aware that the Regional Board is preparing a TMDL for the San Joaquin River.

Paragraph 5
Response: Please see responses to Paragraphs 1 and 4, above. Impacts to the San Joaquin River are not anticipated as a result of this 1-year pumping program.

Specific Comments

Comment 1
Response: This EA evaluates the effects of the 2001 pumping program on water quality in and downstream of the Mendota Pool. The quality of the water delivered to the Pool via the Delta-Mendota Canal is considered to be the baseline from which effects are measured. As discussed in the responses to Paragraphs 1, 4, and 5, impacts to the San Joaquin River are precluded due to the mitigation measures implemented to prevent impacts to water quality at the Exchange Contractors' intakes. As presented in Appendix D to the final EA, the 2001 pumping program may result in the reduction of selenium concentrations in the southern portion of the Fresno Slough because selenium concentrations in the Mendota Pool Group wells are lower than those at the Delta-Mendota Canal terminus. The 2001 monitoring program will provide the necessary data to evaluate boron loads to the Pool.

Comment 2
Response: This EA focuses on the direct impacts of the pumping program to receiving waters, and addresses indirect impacts qualitatively. Indirect impacts are difficult to assess in a quantitative manner.

Comment 3
Response: Comment noted. Table 4-1 was revised to reflect the more conservative water quality objective. At present, there are no data with which to compare with the water quality objective for boron. Groundwater, surface water, and sediment samples collected as part of the 2001 monitoring program will be analyzed for boron, as well as selenium, arsenic, and molybdenum.

Comment 4
Response: Flow direction in the Pool can be predicted based on the expected water demands of users as determined by the San Luis and Delta-Mendota Water Authority (Authority), which monitors and controls inflows and outflows to the Pool and determines how much water should be delivered to the Pool each day via the Delta-Mendota Canal. The Authority maintains a daily water budget based on expected and actual water demands and inflows. Continuous EC recorders are installed at the terminus of the Delta-Mendota Canal and at the Exchange Contractors' canal intakes. These recorders use telemetry to transmit the data continuously to the responsible agencies.

Comment 5
Response: The data in Tables 3-1, 3-2, and 3-4 were accumulated from a variety of sources. Data collected by the Mendota Pool Group generally had a detection limit of 2 µg/L for selenium, with the exception of summer 2000 when a laboratory labeling error resulted in a detection limit of 10 µg/L. Data obtained from Reclamation generally had a detection limit of 0.4 µg/L, although it was occasionally lower. The tables identify the laboratory that conducted each set of analyses. Starting in the spring of 2001, selenium samples collected by the Mendota Pool Group are being analyzed with a detection limit equal to or better than 0.4 µg/L.

Comment 6

Response: The flow data used in this analysis were obtained from the projected pumping rates as presented in Table 2-1 for the 2001 pumping program. Concentration data used in the analysis were obtained from the data presented in Figures 4-1 and 4-2.

An analysis of selenium loading from Mendota Pool Group pumping in 2001 has been recently repeated using groundwater selenium data collected in June 2001 (detection limit of 0.4 µg/L), and corresponding flow data in the Mendota Pool. This analysis indicated that the total selenium load to the Mendota Pool from Mendota Pool Group pumping in 2001 would be approximately 8.5 kg (Appendix D).

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July 13, 2001

VIA FAX 559-487-5397 AND HAND DELIVERY

File No. 8900.03

Judi Tapia
Environmental Specialist
Department of the Interior
Bureau of Reclamation
1243 "N" Street
Fresno, California 93721-1813

Re: *Mendota Pool 2001 Exchange Agreement*
Environmental Assessment - EA Number 01-24

Dear Ms. Tapia:

Please be advised that this firm represents the City of Mendota as its City Attorney. On behalf of the City Council of the City of Mendota, please accept our sincere appreciation for the opportunity to review and comment on the referenced Draft Environmental Assessment ("EA"). The City Council has authorized me to summarize the City's comments and transmit them to you by letter as follows:

1. General Comments

The National Environmental Protection Act ("NEPA") generally requires, like its California counterpart, the California Environmental Quality Act ("CEQA"), that projects involving the discretionary decision making of government officials be reviewed for potential effects on the environment. In the case at hand, the project is stated to be a one-year groundwater pumping program proposed by a group of farmers, the Mendota Pool Group ("MPG"), in the vicinity of the Mendota Pool in western Fresno County. The EA, on its face limits its scope of analysis to the effects of the proposed one-year project. However, as disclosed throughout the report, the one-year project is really part of a ten-year plan by these same farmers to pump groundwater into the Mendota

Pool. It is the City's position that limiting the scope of this EA to just the one-year proposal violates the requirements of both NEPA and CEQA, which independently require the decision maker to review and analyze the full scope of a project without breaking it down into increments. Such incremental review fails to fully consider the cumulative effects of the full project, which effects are clearly noted in this case as being substantial, but are ignored for the sake of the one-year proposal. As such, the EA is fatally flawed from the outset. It is the position of the City of Council that the EA should be revised to more properly analyze the full ten-year project.

The purpose of an Environmental Assessment is presented at Section 1508.9 (40 CFR 1508.9) which states:

> **Sec. 1508.9 Environmental assessment.**
>
> "Environmental assessment"
>
> (a) Means a concise public document for which a Federal agency is responsible that serves to:
>
> 1. Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.
>
> 2. Aid an agency's compliance with the Act when no environmental impact statement is necessary.
>
> 3. Facilitate preparation of a statement when one is necessary.
>
> (b) Shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted.

With regard to 1508.9 (a) 1., the EA does not provide sufficient evidence and analysis to conclude that the project would not have a significant effect on the environment as it fails to include information such as the report prepared by Ken Schmidt. Merely including reference to a report, without actually incorporating its contents or analyses, is not adequate.

With regards to 1508.9 (b) alternatives to the project are not adequately discussed as required. As evidenced by Appendices 5.0 and 6.0 of the EA, no persons from the City of Mendota were contacted in the preparation of the EA.

The EA fails to consider the cumulative effects of the project. Section 1508.7 (40 CFR 1508.7) of the implementing procedures of the Council on Environmental Quality (CEQ) defines cumulative impact as follows:

Sec. 1508.7 Cumulative Impact.

"Cumulative impact" is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

While the EA clearly acknowledges that the real project will extend over a ten-year period, the EA limits its assessment to only one-year. In keeping with Section 1508.7, because the ten year contract is a "reasonably foreseeable future action", it must be assessed. Otherwise, the EA would be piece-mealing the project. In addition, Section 1508.25 requires that all parts of the project are to be assessed.

2. Failure to Consult the City of Mendota

Appendices 5.0 and 6.0 list the references, preparers, and reviewers of the EA. Conspicuously missing are any staff members or consultants to the City of Mendota. This omission is difficult for the City Council to understand given that all of the wells included within the scope of the proposed project are within one mile of the easterly boundary of the City limits of Mendota, and are well within the City's proposed sphere of influence and proposed General Plan boundaries. The prior draft and final Environmental Impact Reports ("FEIR") prepared for the MPG's former project identified numerous significant environmental effects of the MPG's groundwater pumping, including significant effects upon the City's domestic groundwater quality and upon its citizens. In addition, the lawsuits filed after certification of the FEIR similarly identified numerous significant environmental effects on the City and its residents. The failure to consult with any City personnel or consultants regarding the proposed project, in light of the history of the MPG proposals, is difficult for the Mendota City Council to understand. Such lack of consultation is a fatal flaw in the preparation of the EA. The City Council requests that finalization of the EA be delayed until consultation with the City's staff and consultants can be completed.

3. Failure to Mitigate Impacts.

Section 1.3.4 of the EA discusses significant impacts disclosed in the FEIR. However, the EA fails to fully discuss how the proposed project will mitigate the effects of the previously referenced impacts.

4. Required Decisions.

Section 1.4 of the EA states that the Bureau of Reclamation's decision is limited to a determination based upon the proposed one-year program. As previously discussed, the real project is a ten-year pumping proposal. Consequently, the Bureau is improperly limiting the scope of review of the EA, making the questions presented similarly limited in scope.

5. Proposed Action.

Section 2.2.2 states that the proposed action consists of the "2001 pumping program." As previously stated, this action is too narrow. A one-year program cannot possibly adequately mitigate long-term impacts on groundwater and surface water identified in the FEIR. As explained in the EA, the design of the pumping program was to "... reduce the potential for subsidence due to cumulative drawdowns..." and "... to ensure that the surface water quality criterion for selenium is not exceeded...." However, this statement fails to address the issue of cumulative degradation of groundwater in the vicinity of the MPG wells, and particularly in the vicinity of the City of Mendota.

6. Discussion with Interested Parties.

The next-to-last paragraph in section 2.2, on page 2-3 of the EA states that the surface water and groundwater monitoring programs were designed after MPG discussions with other interested parties. However, none of those discussions were with staff members of the City of Mendota or its consultants. Completion of the EA should be delayed until such discussions are implemented.

7. Additional Mitigation Actions.

The last paragraph in section 2.2, on page 2-3 of the EA states that MPG has agreed to compensate other major groundwater pumpers in the Mendota area. However, the list of compensated groundwater pumpers does not include the City of Mendota. The City is, in fact, being forced to spend $5.5 million to move its domestic wells to an alternate location, due at least in part to the effects of the MPG wells.

8. Construction of New Wells.

Section 2.4.3 of the EA describes potential damage to the California Aqueduct as a result of alternate new wells on MPG property near the Aqueduct. However, this statement conveniently ignores the effect of the scores of MPG wells located immediately adjacent to the City of Mendota.

9. Increase in Groundwater Gradient.

Section 2.5 of the EA describes an increase in the groundwater gradient resulting in continued degradation of the groundwater quality in the vicinity of Mendota. However, later conclusions of the EA are that the environmental effects of the 2001 pumping program are not significant. How are these apparently contradictory conclusions reconciled? In addition, what are the financial effects of these conclusions on the City of Mendota?

10. 10-Year Program.

The last paragraph of section 2.5 of the EA briefly discussed the proposed ten-year program. For the reasons previously set out herein, this discussion should not be relegated to a single paragraph. Rather, the ten-year program should be the focus of the EA.

11. Impacts of FEIR.

Section 4.1 of the EA states that a majority of the impacts disclosed in the FEIR were less than significant. However, what this statement fails to disclose is that the other impacts were found to be very significant, so significant that they provided the factual basis for the subsequent lawsuit filed after the FEIR was certified.

12. Significance Criteria.

Due to the limited nature of the scope of the EA, the validity of the significance criteria should be questioned. The criteria should be re-evaluated in light of the ten-year project.

13. Cumulative Effect on Groundwater Levels.

The first paragraph of section 4.2.2.3 of the EA concludes by stating that, "...groundwater overdraft is not anticipated to occur in the Mendota area." This statement is completely wrong, and totally without factual support. The MPG wells themselves have resulted in groundwater overdraft. In addition, such over drafting conditions are disclosed in the FEIR and in the reports of Ken Schmidt. It is a well-known fact that over drafting exists throughout the San Joaquin Valley basin.

14. Analysis of Impacts.

Section 4.2.4.2 of the EA discusses numerous impacts of the MPG pumping at pages 4-9 through and including 4-12, concluding that the cumulative negative effect on groundwater quality is significant and unavoidable. How is this finding reconcilably with the ultimate conclusion of the EA that the effects of the 2001 program are not significant?

15. Summary of Impacts.

The EA concludes with a summary of impacts at section 4.3 and a statement that the effects would be less than significant. This conclusion is not supported by the summarized impact. Unavoidable impacts, such as degraded groundwater quality cannot possibly lead to a conclusion that the environmental effects of the proposed project are not significant. The conclusion is simply not a true statement of the impacts.

Again, on behalf of the City Council of the City of Mendota, thank you for the opportunity to comment.

Very truly yours,

DOWLING, AARON & KEELER

David J. Weiland
Mendota City Attorney

DJW:sdk

cc: Mendota City Council
John Macias, City Manager
Keith Woodcock, Assistant City Manager

8900\03\054B1780.DJW.wpd

Response to Comments from
City of Mendota
City Attorney

Comment 1 General Comments
Response: This EA is intended to provide information as the basis for a decision by Reclamation as to whether to issue 1-year exchange agreements with the members of the Mendota Pool Group. The EA addresses those impacts that are likely to occur as a result of this 1-year agreement.

Published environmental reports and available data were used to evaluate the effects of the proposed project. The reports prepared jointly by Kenneth D. Schmidt & Associates (KDSA) and Luhdorff and Scalmanini Consulting Engineers (LSCE) were extensively reviewed during preparation of this EA. Mr. Schmidt provided extensive review and comments on earlier drafts of the EA. LSCE participated in the preparation of the EA. Data presented in the KDSA and LSCE reports were supplemented with additional monitoring data collected in 2000 and 2001, and evaluated in the EA.

Reclamation considers that alternatives to the project were adequately discussed. Several alternatives were presented and analyzed in the draft EIR (1995) and final EIR (1998) prepared by Jones and Stokes for Westlands Water District. Feasible alternatives to the current 1-year program that were discussed in the EIR were evaluated in Section 2 of the EA.

The EA focuses on the reasonably foreseeable effects of the 1-year program. The 10-year program is still speculative. While a long-term project has been proposed in the past, it has not been permitted or implemented. The design and extent of such a program will depend on the results of 2001 pumping and monitoring program. The data provided by the 2001 program would allow the evaluation of the potential effects of a longer duration program.

Comment 2 Failure to Consult the City of Mendota
Response: The City did not comment on the draft EIR prepared by Jones and Stokes (1995) for the 78,000 acre-foot per year pumping program. Reclamation considered that the City had no major objections to the project. Potential impacts to the City's water supply wells were evaluated in the EA (Section 4.2.4). In preparing this EA, discussions included the parties involved in the litigation resulting from the FEIR (Jones and Stokes, 1998), other major agricultural users, and the California Department of Fish and Game (Mendota Wildlife Area).

It is Reclamation's understanding that constructive conversations have occurred between the City and the project proponents to resolve any issues that the City may have.

Comment 3 Failure to Mitigate Impacts
Response: Potential impacts of the 2001 pumping program to the four major environmental resources that were determined by the FEIR to be impacted are discussed in Section 4 of the EA. Section 2.2.2 of the EA identifies the constraints that were placed on the design of the 2001 pumping program to mitigate the potential impacts identified in the FEIR.

Comment 4 Required Decisions
Response: The EA focuses on the 1-year program. The scope and design of a 10-year program is still speculative and will depend on the results of 2001 pumping and monitoring program. While a long-term project has been proposed in the past, it has not been permitted or implemented.

Comment 5 Proposed Action
Response: Reclamation is not proposing to permit a long-term program at this time. Implementation of a limited 1-year program would provide data on environmental effects of the pumping program that can be used to predict potential effects of a long-term program. While a 1-year program could not mitigate long-term effects, it could be designed to prevent any contribution to long-term effects. Degradation of groundwater quality is not anticipated under the 1-year pumping program. Historically, degradation of the quality of the City's wells occurred in the 1980's. Based on the recent monitoring data evaluated in this EA, there has been no degradation of the City's wells over the past two years. Since the 2001 pumping program is anticipated to increase the lateral movement of groundwater by less than 170 feet, further degradation is not anticipated.

Comment 6 Discussion with Interested Parties
Response: The City did not comment on the draft EIR prepared by Jones and Stokes (1995) for the 78,000 acre-foot per year pumping program. Reclamation considered that the City had no major objections to the project. Potential impacts to the City's water supply wells were evaluated in the EA (Section 4.2.4). In preparing this EA, discussions included the parties involved in the litigation resulting from the FEIR (Jones and Stokes, 1998), other major agricultural users, and the California Department of Fish and Game (Mendota Wildlife Area).

It is Reclamation's understanding that constructive conversations have occurred between the City and the project proponents to resolve any issues that the City may have.

Comment 7 Additional Mitigation Actions
Response: The Mendota Pool Group considers the City of Mendota to be one of the major groundwater pumpers in the area and intends to open discussions with the City concerning reimbursement of costs incurred due to Mendota Pool Group pumping activities. It is Reclamation's understanding that constructive conversations have occurred between the City and the project proponents to resolve any issues that the City may have.

Comment 8 Construction of New Wells
Response: Section 2.4.3 discusses the construction of new wells within Westlands Water District as an alternative to the proposed groundwater exchange program. The new wells would pump an equivalent amount of water to that proposed in the 2001 project. Wells located near the California Aqueduct and completed below the Corcoran Clay could cause localized subsidence and damage the aqueduct. This alternative does not propose the construction of any new groundwater production wells near the City of Mendota as an alternative to the proposed pumping program.

The 2001 pumping program is designed to limit subsidence at the Fordel and Yearout extensometers to a maximum of 0.005 foot. This is the minimum subsidence that can be reliably modeled and measured. The proposed pumping program will not cause subsidence in the City of Mendota.

Comment 9 Increase in Groundwater Gradient
Response: On a regional and long-term scale, any and all pumping in the vicinity of Mendota will result in a gradual degradation of groundwater quality due to the presence of poorer quality groundwater upgradient of the area. The magnitude of the degradation is dependent on the rate of groundwater extraction and the duration of the pumping (i.e., number of years). The 1-year groundwater pumping program discussed in this EA is of short duration, and of small to moderate magnitude. Over the course of the 1-year program, changes in groundwater quality that are attributable to pumping by the Mendota Pool Group are not likely to be detectable. Hence, the impacts of this 1-year project on groundwater quality are considered to be less than significant.

Comment 10 10-year Program
Response: The EA focuses on the reasonably foreseeable effects of the 1-year program. The 10-year program is still speculative. While a long-term project has been proposed in the past, it has not been permitted or implemented. The design and extent of such a program will depend on the results of 2001 pumping and monitoring program. The data provided by the 2001 program would allow the evaluation of the potential effects of a longer duration program.

Comment 11 Impacts of FEIR
Response: Section 4.1 states that impacts that were determined to be less than significant in the draft and final EIRs (Jones and Stokes 1995, 1998) were not evaluated in this EA. Section 4.1 also indicates that the 2001 pumping program was designed to mitigate the effects that were considered to be significant in the EIR.

Section 1.3.4 lists the significant impacts specifically identified in the FEIR. The EA focused on evaluating these impacts relative to the 2001 pumping program.

Comment 12 Significance Criteria
Response: The significance criteria are relevant to the 1-year pumping program.

Comment 13 Cumulative Effect on Groundwater Levels
Response: The hydrology consultants for the Exchange Contractors and the Mendota Pool Group (KDSA and LSCE, respectively) have agreed that the groundwater in the Mendota area is not currently in a state of overdraft. In fact, groundwater levels generally have been increasing since the mid-1990's. The FEIR did identify that the pumping of 78,000 acre-feet per year over 20 years would likely result in overdraft. However, the proposed pumping of up to 31,000 acre-feet during 2001 would allow recovery of the groundwater levels during the following winter season.

Comment 14 Analysis of Impacts
Response: Based on the interpretation of the data on groundwater quality collected to date, the 2001 pumping program, in and of itself, will not result in significant degradation of groundwater quality. Groundwater pumping for irrigation and municipal purposes in the Mendota Pool area has been conducted for years. The analysis of the historical data presented in the EA (Tables 3-1 and 3-2) indicates that groundwater degradation did not occur during 1999 and 2000 as a result of all pumping activities, including Mendota Pool Group pumping. Assuming that the total volume of pumping by all users in 2001 is similar to the volume pumped in 1999 and 2000, there should be no degradation of groundwater quality.

Comment 15 Summary of Impacts
Response: The EA concludes that the effects of the 1-year pumping program would be less than significant. Groundwater quality degradation occurred during the drought of the late 1980's. Since the mid-1990's groundwater levels have been generally increasing. The analysis of the historical data presented in the EA (Tables 3-1 and 3-2) indicates that groundwater degradation did not occur during 1999 and 2000 as a result of all pumping activities, including Mendota Pool Group pumping. The available data indicate that any change in groundwater quality over a 1-year period would be small, and likely would be less than the observed variation between samples.

BOARD OF SUPERVISORS
COUNTY OF MADERA
MADERA COUNTY GOVERNMENT CENTER
209 W. YOSEMITE AVE. / MADERA, CALIFORNIA 93637-3534
(559) 675-7700 / FAX (559) 673-3302 / TDD (559) 675-8970

July 12, 2001

United States Department of the Interior
South Central California Area office
1243 "N" Street
Fresno CA 93721-1813

Re: Objections to Draft Environmental Assessment for Mendota Pool 2001 exchange agreements

Gentlemen:

(1) At its meeting on July 10, 2001, the Board of Supervisors of the County of Madera was advised that the Bureau of Reclamation had released a draft Environmental Assessment in connection with the proposed issuance of exchange agreements between the Bureau of Reclamation and the Mendota Pool Group. Responses are due on July 13, 2001.

(2) The proposed project has potentially serious consequences for the County of Madera and the County requests that it be permitted an additional two weeks from the July 13 deadline to submit comments. We feel it is unreasonable that you will not allow a 30 day period to review and comment on an Environmental Assessment which we understand comprises more than 100 pages.

(3) Local water users will suffer if the Mendota Pool Group is permitted to pump water for use out of the County. The groundwater level will certainly decline and the quality of the groundwater will be impaired as a result of increased salinity.

(4) There is the additional question whether it is even legal to allow groundwater pumping for delivery to the Westlands Water District to the detriment of users who apply the water to land that overlies the aquifer.

(5) The Board has not reviewed the entire Environmental Assessment for the proposed Mendota Pool Exchange Agreement. However, the Board was provided with pages 1-1 through 1-10 of the EA. Those pages outlined the background and previously performed environmental work which resulted in findings

of adverse groundwater impacts. This project appears to be a scaled down version of the earlier project which has potential for similar impacts. The Environmental Assessment asks four questions related to those impacts. The Board of Supervisors of the County of Madera respectfully submits that a "yes" answer to any of those questions should result in a "no" vote on this project. Those questions are:

1. Does the proposed 2001 pumping program result in a significant lowering of groundwater levels?

2. Does the proposed 2001 pumping program result in a significant reduction in groundwater quality in wells of the MPG or of other users?

3. Will the proposed 2001 pumping program result in significant subsidence of the land surface?

4. Will the proposed 2001 pumping program result in a significant reduction in the quality of the surface water within Mendota Pool, downstream sections of the San Joaquin River, or in the surface water delivered to other users?

(6) By making these objections the County is in no way withdrawing its request for additional time to comment. No purpose will be served by risking litigation with the various entities that are affected by this project and wish to comment, where their rights can be protected by a short extension of time.

Sincerely,

GARY GILBERT, Chairman
District 5 Supervisor

Response to Comments from
County of Madera
Board of Supervisors

Paragraph 1
Response: Comment noted.

Paragraph 2
Response: Reclamation determined that a public comment period of 21 days would be appropriate due to extensive review and discussions prior to release of the public comment draft. At the request of Reclamation, the Mendota Pool Group undertook extensive discussions with a number of water users bordering the Pool, including the San Joaquin River Exchange Contractors, Newhall Land and Farming, James Irrigation District, Tranquility Irrigation District, and the California Department of Fish and Game and incorporated all of their comments and concerns prior to the release of the Draft EA. Furthermore, the Mendota Pool Group responded to all of Reclamation's requests for additional data, information, and analyses during the document preparation.

Subsequent to the close of the comment period, Reclamation held an open house at their offices in Fresno California. The purpose of this open house was to (1) present the findings of the draft EA, (2) clarify the scope and intent of the proposed project, (3) ensure that all issues were considered, and (4) provide an opportunity for the project proponents to directly interact with those individuals or agencies that had questions or concerns.

Paragraph 3
Response: Only five of the Mendota Pool Group wells are located in Madera County (the Farmers Water District East and West Loop wells). These wells will not be pumped for exchange with Reclamation. The 2001 groundwater pumping program is designed to allow full recovery of groundwater levels during the winter period.

Paragraph 4
Response: None of the water that is proposed for exchange will be derived from wells located within Madera County. Furthermore, the Agreement between the Mendota Pool Group and the Exchange Contractors and Newhall Land and Farming has mitigated the potential impact in the portion of Madera County most likely to be effected. Impacts in Madera County east of Newhall Land and Farming are predicted to be small.

Paragraph 5
Response: The Draft EA addressed each of the four questions in Section 4.2. Question 1 was addressed in Section 4.2.2. Question 2 was addressed in Section 4.2.4. Question 3 was addressed in Section 4.2.3. Question 4 was addressed in Section 4.2.5. No significant effects were found for any of the potential impacts evaluated.

Paragraph 6

Response: Subsequent to the close of the comment period, Reclamation held an open house at their offices in Fresno California. The purpose of this open house was to (1) present the findings of the draft EA, (2) clarify the scope and intent of the proposed project, (3) ensure that all issues were considered, and (4) provide an opportunity for the project proponents to directly interact with those individuals or agencies that had questions or concerns.

FRIANT WATER USERS AUTHORITY

Luce

WORKING COPY 4/12

July 13, 2001

Ms. Judi Tapia
U. S. Bureau of Reclamation
South-Central California Area Office
1243 "N" Street
Fresno, CA 93721-1813

Re: Draft Environmental Assessment for Mendota Pool 2001 Exchange Agreements

Dear Ms. Tapia:

Friant Water Users Authority appreciates the opportunity to review the subject Environmental Assessment (EA) and provides the following comments for your consideration:

1. Page 1-8 - FEIR significant impacts do not address the impact of the pumping to the shallow alluvial groundwater that supports the San Joaquin River. This water is typically found at depths of 35 feet and less based on alluvial groundwater monitoring wells on the River upstream of Mendota Pool.

   It appears for the most part that the monitoring program has not evaluated the impacts of this pumping on the alluvial groundwater at all, but on deeper "shallow" groundwater and deep groundwater.

   It is stated that the impacts of the pumping are not significant, but as the hydraulic relationship of the shallow alluvial groundwater that supports the River and the deep groundwater strata is unknown, it is impossible to make that statement. It has no basis.

2. Page 4-1 - The EA does not address the potential for impacts to associated riparian habitat nor to the effects of the pumping on riparian and wetland habitat because of the lowering of the alluvial groundwater table that could occur from the pumping.

   As only a few of the monitoring wells are perforated in the strata (0-35 feet) that support the River (alluvial groundwater), it is not possible that the previous tests conducted for this project could have evaluated the impacts to the surface biological resources (riparian habitat, wetlands etc.). Consequently, the validity of the conclusions of no significant impact is questionable.

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332 Norwalk
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1521 I Street
Sacramento, CA 95814
Phone: 916-441-1931
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Website: www.fwua.org

The fact that the pumping program is proposed to double the amounts pumped during dry years, would likely increase the potential for adverse long-term effects on the riparian habitat. The EA states that the groundwater will recharge during the winter months, which may be true. However, since the extent and relationship of the hydraulic connectivity between deep and alluvial groundwater strata is unknown, it cannot be stated that reduced deep groundwater levels won't affect the surface ecological resources. Lower alluvial groundwater levels are precisely what are contributing to the loss and degradation of the riparian habitats along the River. Further, since the upper-most alluvial water generally wasn't monitored at all (basically only a single well is indicated to be perforated only in the alluvial groundwater strata), these impacts have not been evaluated and the extent of impact cannot be determined.

3. Page 4-3 – The bulleted item at the top of the page states that an increase in the rate of seepage out of Mendota Pool is significant if the availability of surface water or groundwater to other nearby users or for instream uses is substantially diminished. That is true, however, there is still significant impact even if seepage out of Mendota Pool increases at a rate that the availability of surface water or groundwater to users are not diminished. Increasing the seepage out of Mendota Pool in any quantity results in greater losses at Mendota Pool and thus reduces the quantity of surface water available to other users of the Central Valley Project water.

4. Page 4-4 - As we were unaware of the pumping project in 1999, we were unaware of the potential it had to be affecting the alluvial groundwater monitoring wells along the lower stretch of Reach 2 of the San Joaquin River. As the alluvial groundwater appears, from data collected from those wells, to flow to the southwest, such an impact may well be affecting the rate of alluvial groundwater flow away from the River and the riparian habitat along the River and adjacent elderberry savanna and wetland habitats.

5. Page 4-4 – As the year 2001 is a dry year and alluvial groundwater levels are decreasing naturally, the effect of additional pumping in August or September can only be anticipated to further reduce the alluvial groundwater elevations that support the River or increase the alluvial groundwater draw away from the River. Either or both of these could contribute to a continued and increased affect on the riparian habitat. The doubling of pumping would also serve to increase that adverse effect.

6. Page 4-5 - As the relationship of the alluvial groundwater strata and deep groundwater is unknown, no conclusion can be drawn concerning the significance of deep groundwater table elevation reductions on the alluvial surface water. The confining clay layer is not contiguous and, further, the confining clay layers for the alluvial strata that support the River are thin and likely discontinuous.

Although the EA states that there is no connection, from the data provided in the tables, there are no wells that serve to analyze a connection or impacts to alluvial groundwater that supports habitat along the San Joaquin River. Consequently, the true effects of any of the previous pumping have not been analyzed.

7. Page 4-5 – The EA states that a direct hydraulic connection between surface and groundwater exists beneath the San Joaquin River arm of the Pool. It further states that there are no shallow wells near this branch of the Pool to create drawdowns that would induce additional seepage from the Pool. On page 3-2, the EA states that the A-clay, which separates the shallow groundwater from the deep groundwater, pinches out east of San Mateo Road. This would mean that the shallow and deep aquifers are not separated by the A-clay at the east edge of the Pool. It would then seem apparent that pumping at the deep level will have direct impact on the shallow aquifer and thus would have a direct adverse impact on the seepage rate of Mendota Pool on the San Joaquin River arm. There is no support to conclude that MPG pumping from the deep zone is unlikely to cause increased seepage from Mendota Pool.

   The direct connection between the shallow and deep groundwater aquifers due to the lack of a confining A-clay layer would also indicate that pumping from the deep aquifer could adversely affect the alluvial groundwater levels.

8. Monitoring Program - The monitoring program does not address the critical alluvial groundwater strata that support the San Joaquin River. Based on data from pilot projects on the San Joaquin River conducted by the Friant Water Users Authority and the Natural Resources Defense Council, the water that supports a River surface flow is primarily confined to approximately the top 35 feet of the alluvial strata.

   As the alluvial groundwater is not being monitored, the effects of this pumping on that strata, the River surface flow or the dependent riparian vegetation cannot be evaluated. The vegetation itself should be monitored, as well as the alluvial groundwater.

9. Monitoring Program – It is not clear how the volume of the groundwater pumped is measured. The monitoring program should include requirements for flow meters on the groundwater wells of sufficient accuracy to measure the volume of groundwater pumped and for the proper calibration and maintenance of these meters to assure their continued accuracy.

Thank you again for the opportunity to comment on the subject EA and your serious consideration of these comments. We request that all of our comments be addressed and we look forward to working with you in the near future. Should you have any questions in regard to the subject matter, please do not hesitate to call me at (559) 562-6305.

Sincerely Yours,

Laurence Kimura, P.E.
Water and Environmental Resources Manager

cc: William H. Luce, Area Manager, USBR
Richard M. Moss, General Manager, FWUA
Ronald D. Jacobsma, Business Operations Manager, FWUA

Response to Comments from
Friant Water Users Authority

Comments 1 and 2
Response: The impact of Mendota Pool Group pumping on the shallow aquifer that is in hydraulic communication with the San Joaquin River is addressed in the EA and the Phase I report (KDSA and LSCE, 2000a). Water level data are available from 21 shallow wells in the current Mendota Pool Group monitoring program. Twelve of these wells are 80 feet deep or less. In addition, historical data are available from several shallower wells in the Mendota area. None of these data indicate the presence of a separate "alluvial" aquifer above the aquifer that is generally designated as shallow, and which extends from the water table to the A-clay. During the winter, the water table ranges from about 10 feet below ground surface near the San Joaquin River to about 30 feet near the Fresno Slough. The depth of the A-clay is typically 70 to 100 feet.

Two of the shallow monitoring wells installed by Newhall Land and Farming in 1999 (MW-2 and MW-3) are located just north of the San Joaquin River. These wells are located in close proximity to several deep Newhall Land and Farming and Farmers Water District production wells. Hydrographs of these monitoring wells are provided on Exhibits A and B along with hydrographs of the closest Newhall Land and Farming production wells. The depth to water in the shallow monitoring wells ranges from 10 to 15 feet, and suggest that the River is in direct hydraulic connection with groundwater during both winter and summer periods. There is little drawdown in these wells in response to the large drawdowns in the deep production wells. Shallower monitoring would have even less drawdown, but the existing monitoring network is adequate to determine pumping impacts on shallow groundwater near the River. The lack of response in the shallow aquifer suggests that deep groundwater pumping near the San Joaquin River does not have a significant impact on flow in the River.

The 10-year program is still speculative. While a long-term project has been proposed in the past, it has not been permitted or implemented. The data provided by the 2001 monitoring program would allow the evaluation of the potential effects of a longer duration program. The proposed plan for a 10-year pumping program indicates that pumping could increase by up to 27 percent in a dry year (not double as indicated by the comment). This increased pumping will not occur in 2001, even though 2001 could be considered a dry year.

Comment 3
Response: Increases in seepage from the Pool could impact other water users as indicated by the comment, but the monitoring data collected in 1999 and 2000 do not show that Mendota Pool Group pumping causes increased seepage. Along the Fresno Slough branch of the Pool, the unsaturated zone beneath the Pool causes seepage to occur at a constant rate whether or not the shallow Mendota Pool Group wells are pumping. There is no unsaturated zone beneath the San Joaquin branch, but there are also no shallow Mendota Pool Group wells in this area and none can be installed due to the Herminghouse Agreement between Reclamation and Farmers Water District. The

monitoring well data show that deep production wells near the River are not impacting shallow groundwater.

Comment 4
Response: The Mendota Pool Group has not had an opportunity to review the data from the shallow monitoring wells referred to in this comment, but it is unlikely that Mendota Pool Group pumping causes impacts to the River, especially in the reach east of the bifurcation. Data available from shallow monitoring wells show that the cone of depression created by shallow Mendota Pool Group production wells does not extend very far beyond the well field. Shallow groundwater elevation contour maps, such as the one showing December 2000/January 2001 water levels (Exhibit C) indicate that shallow groundwater flows away from the River in both directions. South of the River, the flow direction is to southwest, as indicated by the comment. North of the River, the flow direction is to the northeast.

Comment 5
Response: It is likely that shallow groundwater levels near the San Joaquin River will be slightly lower this year than in 1999 or 2000, but the reason is reduced flow in the River not increased groundwater pumping. The rate of Mendota Pool Group pumping in August and September will be similar to 1999 and 2000, and the impacts of this pumping are expected to be similar to those observed in previous years.

Comment 6
Response: As discussed in the response to Comments 1 and 2, there are enough shallow wells in the Mendota Pool Group monitoring network to show the impact of deep groundwater pumping on the shallow aquifer near San Joaquin River.

It is true that the A-clay is not continuous throughout the Mendota area, but there are other shallow clay layers which limit the rate of vertical flow between the shallow and deep aquifers. The monitoring well data discussed above show that impacts of deep groundwater pumping on the shallow aquifer are minimal.

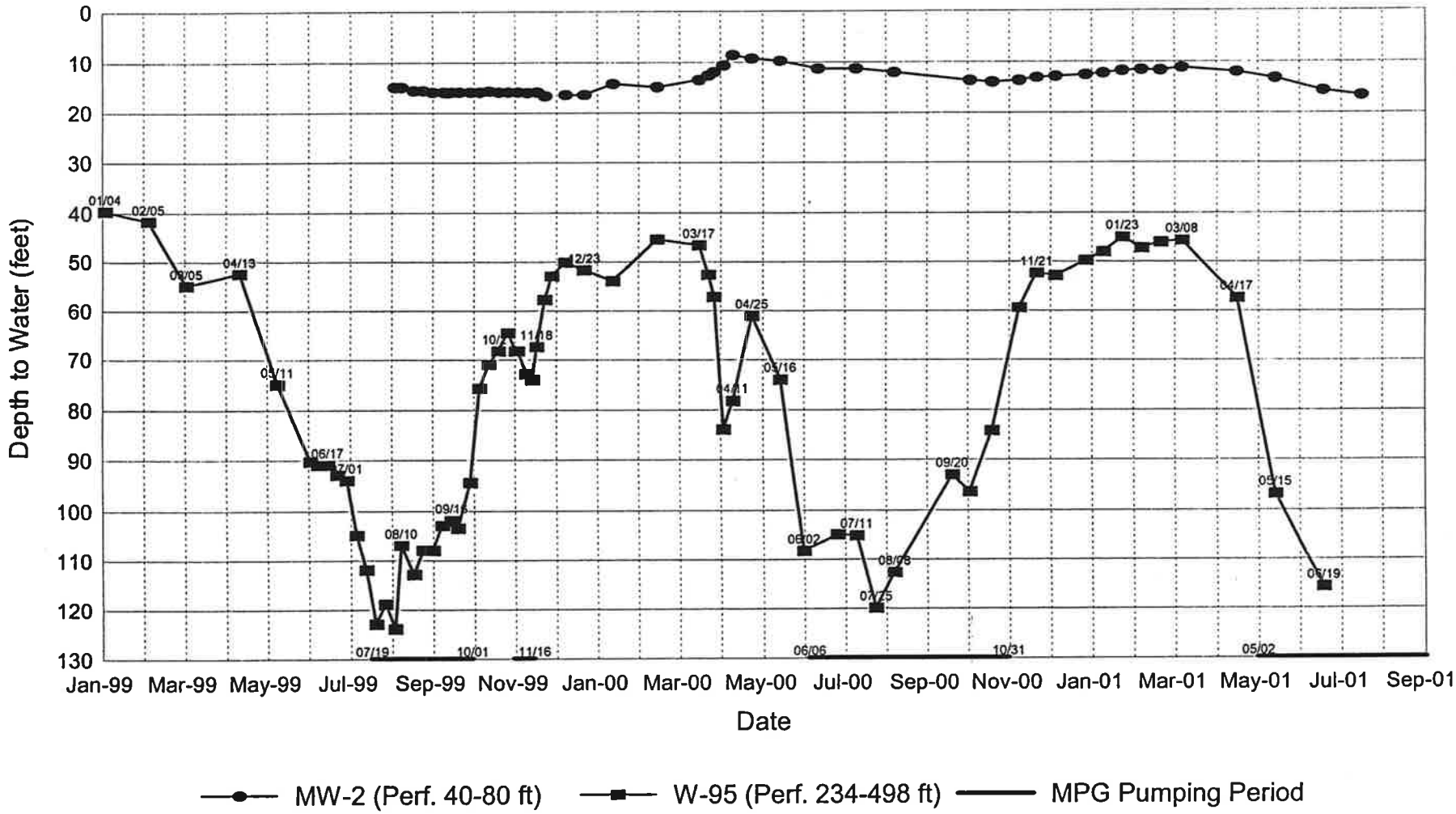
Comment 7
Response: The A clay is considered to decrease in thickness, and become increasingly discontinuous east of San Mateo Road. The San Joaquin River arm of the Mendota Pool generally stops west of San Mateo Road. The A clay would exist under this portion of the Pool, and would serve to reduce the interaction between the shallow and deep zones of the aquifer. The monitoring program designed by LSCE and KDSA is adequate to determine the effects of deep zone pumping in Farmers Water District on shallow groundwater. The data that were available for evaluation by LSCE and KDSA indicate that pumping from the deep aquifer the San Joaquin River does not impact the overlying shallow aquifer, and therefore is unlikely to impact the "alluvial" strata referred to in the comment.

Comment 8
Response: The monitoring program designed by LSCE and KDSA is adequate to determine pumping impacts on shallow groundwater without installing additional shallow

monitoring wells. The data that were available for evaluation by LSCE and KDSA indicate that pumping from the deep groundwater zone near the San Joaquin River does not influence the overlying shallow groundwater zone, and therefore is unlikely to influence the "alluvial" strata referred to in the comment. However, it is always preferable to have more data, and the Mendota Pool Group would appreciate the opportunity to review data from the alluvial monitoring wells referred to in these comments.

Comment 9

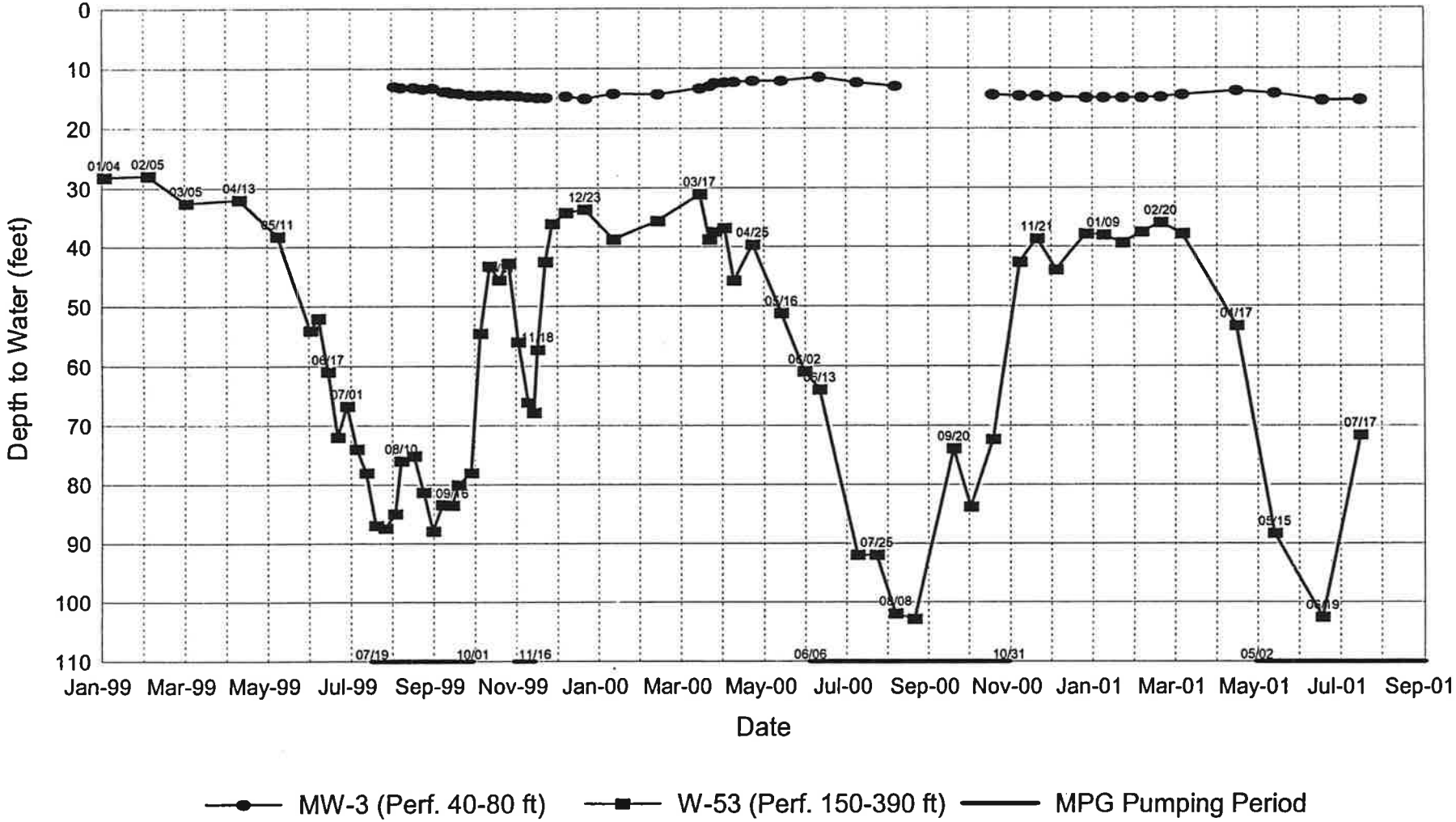
Response: All individual Mendota Pool Group wells or clusters of wells that pump into the Pool are metered. For wells along the Fresno Slough branch of the Pool, the meters are read weekly by the Authority. For wells in Farmers Water District, the meters are read monthly by the District. The calibration of the meters is not checked routinely, but the Authority performs occasional checks and applies correction factors to meters that are out of calibration.



CAD FILE: G:/Projects/Mendota Pool/99-1-018/Annual Report 2000/Exhibit A.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 07-30-01 2:39pm

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

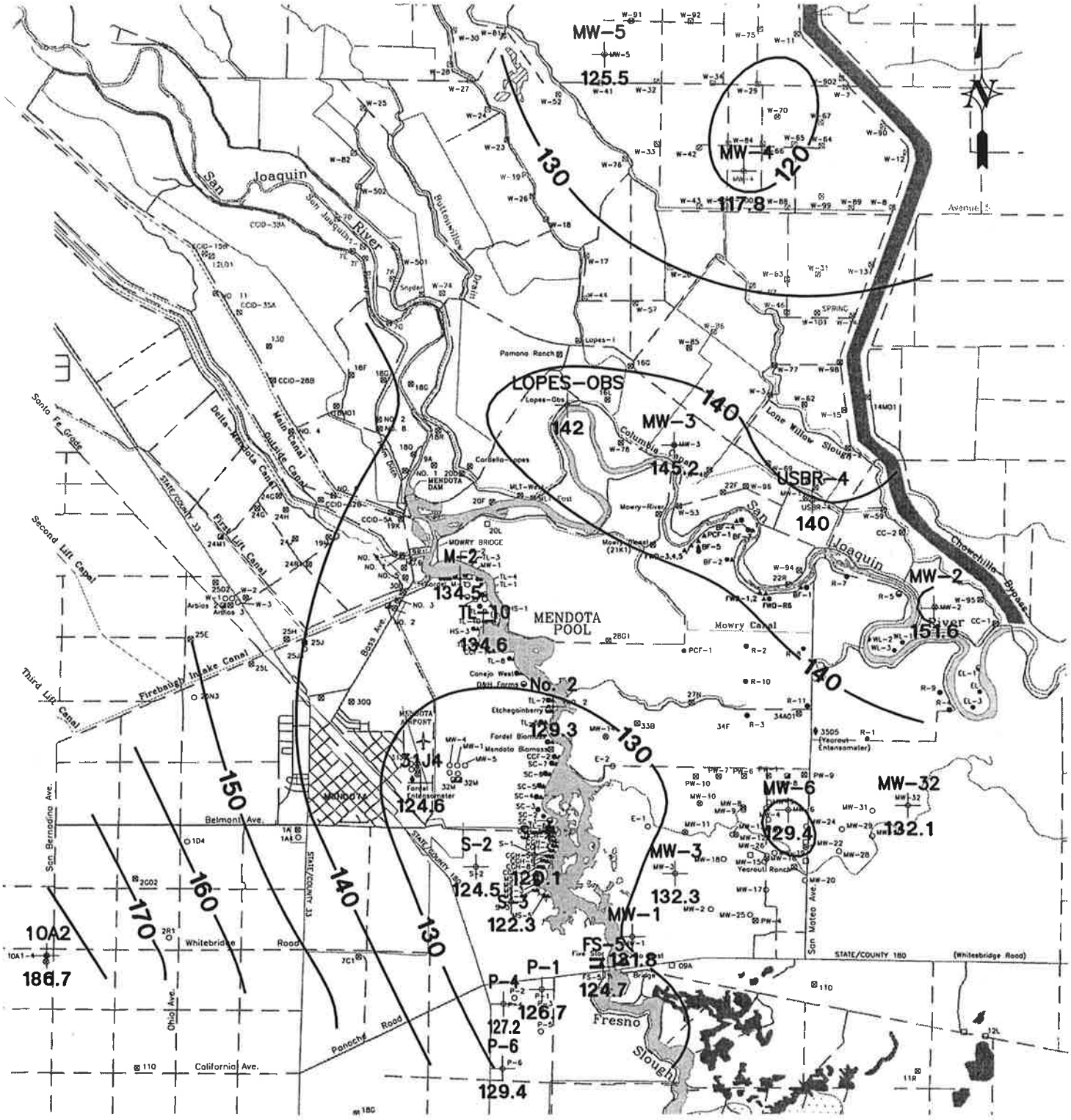
Exhibit A
Ground-Water Levels Near San Joaquin River
NLF MW-2 (Shallow) and W-95 (Deep)



CAD FILE: G:/Projects/Mendota Pool/99-1-018/Annual Report 2000/Exhibit B1.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 07-30-01 2:42pm

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

Exhibit B
Ground-Water Levels Near San Joaquin River
NLF MW-3 (Shallow) and W-53 (Deep)



LEGEND

—110— GROUND-WATER ELEVATION (ft-msl)

Scale in Feet

0' 3000' 6000'

MW-2
+
135.0

WELL LOCATION AND DATA USED FOR CONTOURING

CAD FILE: G:/Projects/Mendota Pool/99-1-018/Annual Report 2000/Exhibit C.dwg CFG FILE: LSCE2500.PCP_MRG DATE: 07-30-01 2:33pm

LUHDORFF & SCALMANINI
CONSULTING ENGINEERS

Exhibit C
Ground-Water Elevations
Above A-Clay: Dec. 2000/Jan. 2001

Scc 400 ___
Scc 102 ___

Gravelly Ford Water District
1836 West 5* Street
Madera, CA 93637
July 11,2001

Bureau of Reclamation
South Central California Area Office
Atten: Jeffrey S. McCracken
1243 N Street
Fresno, CA 93721-1813

Dear Mr. McCracken:

(1) I was appalled as I read over one hundred pages of your attempt to create a fifth Exchange Contractor. Your report should have been titled, Robbing Peter to Pay Paul! Your report was filled with innuendoes and theories yet to be proved and paralleled your attempt to create the Madera Ranch Water Bank. Your report frequently refers throughout that the plan causes no significant consequences. This is only theory and must yet to be proven.

(2) Anyone knows that these plans will overdraft the basin in the Mendota Pool Group but also the surrounding areas as well. The report indicates that seepage water from the San Joaquin River flows north into Madera County and continued pumping by the Pool Group would reverse this trend thereby depriving Madera County's entitlement. While announced plans indicate that 25,000 acre feet to be exchanged, the draft report indicates the plan to pump 31,000 acre feet.

(3) Your report, while mentioning many things failed to mention the names of neither the Mendota Pool Pumpers nor the acreage in W.W.D. that they propose to irrigate.

(4) We feel that this plan is in a direct violation of the Madera County Ordinance that forbids any transfer of water out of its county of origin.

(5) My major concern is that the continued heavy pumping will ultimately produce an intrusion of salt water, which would render all local water useless except for fire suppression.

(6) Our Board of Directors strongly opposes these draft plans and feels it should not be approved nor even considered. We would like to ask for an extension of time to more thoroughly express our concerns. It would be a shame to have to resort to legal remedies in this manner.

Our Board has asked me to submit this letter as an expression of their protest.

Sincerely,

Tim Da Silva
Gravelly Ford Water District
President

Response to Comments from
Gravelly Ford Water District

Paragraph 1
Response: The conclusion of the Draft EA was that the 1-year Mendota Pool Group pumping program would have no significant effect on the environment. The Mendota Pool Group established a groundwater and surface water monitoring program in 1999 to acquire data to evaluate the effects of the groundwater pumping program. Data acquired during 1999 and 2000 do not show evidence of any significant impacts. The monitoring program is ongoing. Specific details of the 2001 monitoring program are provided in Appendix B.

Paragraph 2
Response: The 2001 groundwater pumping program is designed to allow full recovery of groundwater levels during the winter period. Shallow groundwater elevation contour maps show a groundwater ridge beneath the San Joaquin River with groundwater flowing away from the River in both directions (northeast and southwest) during both pumping and non-pumping periods. The most recent of these maps is based on December 2000/January 2001 data and is shown on Exhibit C. Similar contour maps created for July 1999 and July 2000 indicate that groundwater pumping has little effect on the hydraulic gradient in the shallow aquifer near the River. Mendota Pool Group pumping in 2001 will not cause this gradient to reverse, and impacts to shallow groundwater in Madera County are predicted to be minimal.

A maximum of 25,000 acre-feet of water are proposed for exchange with Reclamation. The remaining water will be delivered directly to lands in Westlands Water District via Laterals 6 and/or 7, or traded with other water districts around the Mendota Pool.

Paragraph 3
Response: The names of the members of the Mendota Pool Group are provided in Appendix A. The Mendota Pool Group own approximately 50,000 to 55,000 acres of farm land. They propose to irrigate approximately 30,000 acres of that land with the exchanged waters. A map showing the lands to be irrigated by the exchanged water is provided as Figure 1-2.

Paragraph 4
Response: Only five of the Mendota Pool Group wells are located in Madera County (the Farmers Water District East and West Loop wells). The water from these wells will not be exchanged with Reclamation. Some of the water pumped by these wells has been used for transfer in the past. In 2001, water from these wells will only be used to irrigate overlying lands.

Paragraph 5
Response: This EA is for a 1-year pumping program. The pumping program was designed to allow full recovery of the groundwater levels during the winter. Based on

evaluation of the 1999 and 2000 groundwater data from the monitoring program, there is no evidence that the 2001 pumping program would result in significant degradation of groundwater quality.

Paragraph 6

Response: Your concerns are noted. The Draft EA was released for public comment on June 22, 2001. Reclamation determined that a public comment period of 21 days would be appropriate due to extensive review and discussions prior to release of the public comment draft. At the request of Reclamation, the Mendota Pool Group undertook extensive discussions with a number of water users bordering the Pool, including the San Joaquin River Exchange Contractors, Newhall Land and Farming, James Irrigation District, Tranquility Irrigation District, and the California Department of Fish and Game and incorporated all of their comments and concerns prior to the release of the Draft EA. Furthermore, the Mendota Pool Group responded to all of Reclamation's requests for additional data, information, and analyses during the document preparation.

Subsequent to the close of the comment period, Reclamation held an open house at their offices in Fresno California. The purpose of this open house was to (1) present the findings of the draft EA, (2) clarify the scope and intent of the proposed project, (3) ensure that all issues were considered, and (4) provide an opportunity for the project proponents to directly interact with those individuals or agencies that had questions or concerns.

MADERA IRRIGATION DISTRICT
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July 12, 2001

Bureau of Reclamation
South Central Ave. Office
Atten: Judi Tapia
1243 N Street
Fresno, CA 93721-1813

Re: Draft Environmental Assessment for Mendota Pool 2001 Exchange Agreements

Dear Ms. Tapia:

(1) At the outset, the Madera Irrigation District would like to request an extension of the Public review and comment period on the Draft Environmental Assessment for the Mendota Pool 2001 Exchange Agreement for 45 days until August 27, 2001. In view of the issues raised by the Mendota Pool 2001 Exchange Agreement, a 21-day comment period is woefully short, especially considering that the 4th of July Holiday fell in the middle of this period. Notwithstanding our request for a time extension, set forth below are the District's initial comments on the Draft Environment Assessment.

(2) The "News Release" sent out on the Draft Environmental Assessment by the Bureau's Regional Office is somewhat misleading. It only refers to the 25,000-acre feet of ground water to be pumped in exchange for an equivalent amount of Central Valley Project Water whereas the Draft Environmental Assessment addresses and discusses not only the 25,000 acre feet to be exchanged, but the additional 6,000 acre feet to be pumped, apparently also into the Mendota Pool, (Pool), for direct delivery to Westlands Water District (WWD) or traded with other districts around the Pool. (Page 1-1).

(3) Table 1-1 on Page 1-11 has numbers in parenthesis in the Annual Volume Column. What do these numbers represent?

(4) The pumping schedule outlined on Page 2-2 indicates that the 9130-acre feet (AF) for the May 1- June 15 period and approximately one-third of the 9020 AF to be pumped during the June 16 – Sept 15 period under the Draft Environment Assessment Mendota Pool 2001 Exchange Agreement have already been pumped! From the information in Draft Environment Assessment, it is known that this water is not stored in the Pool, so it can only be concluded that an exchange has already taken place. The effect of such action appears to cast the Draft Environmental Assessment as a document to validate past actions. This conclusion is further reinforced by the statement on Page 2-4, which

states the "not pumping the 31,000 acre-feet of water would be equivalent to fallowing approximately 13,600 acres of land for the year. This land has already been planted for 2001 and cannot be fallowed without large financial losses." Clearly it is inappropriate to use an Environmental Assessment to justify and validate past actions taken prior to required environmental reviews. If in fact, the pumping has not yet commenced, then the pumping required to catch the schedule up will have an even greater impact on the groundwater drawdown, reverse goundwater gradient, and degration of groundwater quality.

(5) On Page 2-4 it states that "This land has already been planted for 2001 and cannot be fallowing without large financial losses." Each landowner must make economic decisions on planting of crops subject to the information available. It was known early in 2001 that this would be a watertight year. A bailout rescue cannot be part of the initial decision or the final solution.

(6) On Pages 2-6 and 2-7 of the Draft Environment Assessment, there is reference to the cummulative effect of the pumping causing a lowering of the groundwater table, an increased groundwater gradient and a continued degradation of groundwater quality. This reference is then followed by the statement that a monitoring program is designed for periodic determination of groundwater levels and that pumping by the Mendota Pool Group (MPG) would be curtailed if groundwater overdraft is indicated or likely to occur. It appears from the information provided that lowering the groundwater table and increasing the groundwater gradient along with a degradation of groundwater quality would not trigger either an overdraft condition or a likely occurrence of such. In view of this, what would trigger such an occurrence? On Page 1-5 , the Draft Environment Assessment provides that the impacts of the 2000-pumping program are still being analyzed. In view of the importance of this analysis of the 2000-pumping program, what kind of time lag would there be in shutting off or curtailing pumping? Based on past operation the ability of the groundwater monitoring program to identify groundwater overdraft conditions appears to be illusory, much less being effective in taking necessary corrective actions.

(7) On Page 3-3, of the Draft Environment Assessment the statement is made "that a direct connection between surface and groundwater likely exists beneath the San Joaquin River arm of the Pool." This would indicate that the groundwater recovery in the winter months as noted on Page 2-7 of the Draft Environment Assessment is in all likelihood water from the Pool. This conclusion is further supported on Pages 4-9 and 10 by the statement that, "Near both branches of the Pool, the quality of shallow groundwater is good due to recharge from the Pool. — Pumping of MPG well (especially shallow wells) may intercept good quality recharge that originates as seepage from the Pool." Hence the "exchange" is an illusion; it is nothing more than pumping of Pool water back to the Pool.

(8) On page 3-12, the Draft Environment Assessment states that the Pool will be drained "for November 2001." How would the water pumped into the Pool up to November 21, 2001 as shown on the schedule on Page 2-2 be of any value in the "exchange"? Based

on the information provided, it would appear that some adjustment should be made for the water dumped from the Pool.

(9) On Page 4-10 the Draft Environmental Assessments states "this shallow groundwater provides recharge to the deep aquifer in the Mendota area and also flows laterally toward the Madera area which is in a state of overdraft. Second, the recharge consist of relatively low salinity water, which acts to maintain the existing quality of groundwater in the area." As previously stated, the proposed pumping will lower the groundwater level and reverse the groundwater gradient. This action will not benefit groundwater in the Madera area but rather adversely impact it. The Draft Environment Assessment also states on Page 4-12 that "over the long-term, the cummulative impact is significant and unavoidable." While we agree with this statement, there is no mention of what actions have been considered to avoid this significant impact.

(10) The Draft Environment Assessment states that the MPG pumpers will reimburse "other major" pumpers for cost due to drawdown including Newhall Land and Farming (NLF) and San Joaquin River Exchange Contractors (SJREC). However, the drawdown experienced by NLF will not stop at their boundary. As NLF pumping levels drop, this will extend to their neighbors. To what extent would reimbursement be made to pumpers and in what form, i.e. substitute water supply and/or financial payment?

(11) In summary the Draft Environment Assessment reveals that:

1. The MPG groundwater pumped is in reality Pool water percolated to the groundwater.
2. The pumping will cause groundwater flow reversal and degradation to groundwater in the Madera over drafted area.
3. The Environment Assessment process is being used to validate water exchanges which are already completed.

(12) For the reasons outlined above, Madera Irrigation District objects to the proposal covered in the Draft Environment Assessment for Mendota Pool 2001 Exchange Agreement, and as stated above request a 45 day extension of the public review period to provide the Bureau further details of our concern with the Proposed Exchanged Agreement.

Very truly yours,

Don Roberts
Assistant Manager-Chief Engineer

DR:mm

CC: Michael Jackson, Deputy Area Manager, Bureau of Reclamation
Madera County Board of Supervisor
Madera County Water Advisor Committee
Gravelly Ford Water District

Response to Comments from
Madera Irrigation District

Paragraph 1
Response: Reclamation determined that a public comment period of 21 days would be appropriate due to extensive review and discussions prior to release of the public comment draft. At the request of Reclamation, the Mendota Pool Group undertook extensive discussions with a number of water users bordering the Pool, including the San Joaquin River Exchange Contractors, Newhall Land and Farming, James Irrigation District, Tranquility Irrigation District, and the California Department of Fish and Game and incorporated all of their comments and concerns prior to the release of the Draft EA. Furthermore, the Mendota Pool Group responded to all of Reclamation's requests for additional data, information, and analyses during the document preparation.

Subsequent to the close of the comment period, Reclamation held an open house at their offices in Fresno California. The purpose of this open house was to (1) present the findings of the draft EA, (2) clarify the scope and intent of the proposed project, (3) ensure that all issues were considered, and (4) provide an opportunity for the project proponents to directly interact with those individuals or agencies that had questions or concerns.

Paragraph 2
Response: The federal action that is subject to the requirements of NEPA is the exchange of up to 25,000 acre-feet of water. The remaining water (approximately 6,000 acre-feet) will be delivered directly to lands in Westlands Water District via Laterals 6 and/or 7, or traded with other water districts around the Mendota Pool.

Paragraph 3
Response: The numbers in parentheses represent the number of years out of the total project duration (i.e., 10 or 20) that may be classified as normal, dry, or wet.

This EA is for a 1-year pumping program. For the purposes of the 1-year program, 2001 has been classified as a "normal" year with a maximum allowable pumpage of up to 31,000 acre-feet as specified in the "Agreement for Mendota Pool Transfer Pumping Project" reached between the Mendota Pool Group and other parties involved in the lawsuit that was filed subsequent to the FEIR.

Paragraph 4
Response: The exchange contracts between Reclamation and the members of the Mendota Pool Group cannot be finalized until the required environmental documentation is completed, and therefore no exchange has taken place. The EA was drafted and the pumping program designed much earlier in the year.

The San Luis and Delta-Mendota Water Authority's policy is that water can be stored in the Pool for a maximum of 60 days during the 2001 water year. Depending on when the

exchange contracts are signed, it is possible that the Mendota Pool Group may not be able to exchange the full 25,000 acre-feet of water with Reclamation and may not get credit for some of the water that has already been pumped.

The discussion on page 2-4 is an evaluation of the feasibility of retiring or fallowing the land for the duration of the 2001 pumping program. Clearly, if the land has already been planted, it would not be feasible to fallow it in 2001. Land retirement or fallowing is not a feasible option for this 1-year program.

Paragraph 5
Response: The pumping program is not intended as a bailout rescue. The discussion of fallowing the land was raised to indicate the rationale for eliminating that alternative from further discussion in this EA.

Paragraph 6
Response: Analysis of the 1999 and 2000 pumping programs has been completed, and has shown no evidence of groundwater overdraft. Prior to initiating a pumping program, extensive groundwater modeling is conducted to evaluate potential effects of alternative pumping programs. Monitoring of groundwater levels is conducted before, during, and after the pumping period. These data are then used to evaluate the initial modeling results and to provide a baseline for future pumping programs. Groundwater overdraft would be indicated if the data show declining water levels during the summer from one year to the next and a lack of full water level recovery during the winter.

The potential for groundwater overdraft was addressed in designing the 2001 pumping program. In order to limit subsidence to less than 0.005 foot, the 2001 program is designed to limit deep zone drawdown and thereby limit the potential for overdraft.

As part of the monitoring program, the water level in 65 groundwater wells is measured on a bimonthly basis. In addition, continuous water level recorders are currently in operation in three of these wells.

Paragraph 7
Response: Groundwater may be recharged due to infiltration of rainfall and applied irrigation water, and seepage from canals, the San Joaquin River, James Bypass (Kings River) and southern portions of the Fresno Slough, as well as seepage from the Pool. Seepage losses from the Mendota Pool will occur in the absence of groundwater pumping. As discussed in Section 4.2.2 of the Draft EA, pumping by the Mendota Pool Group does not influence the rate of seepage from the Pool because an unsaturated zone exists beneath the Fresno Slough branch of the Pool where the shallow Mendota Pool Group wells are located. Along the San Joaquin River branch of the Pool, there are a number of clay layers which greatly limit vertical flow to the deep wells. Data from shallow monitoring wells near the River show that deep zone pumping has a minimal effect on shallow groundwater levels. Therefore, deep zone pumping near the San Joaquin River is not expected to significantly increase seepage from the River.

Paragraph 8
Response: The Pool is not likely to be drained until after the Thanksgiving holiday. Some water pumped in November will be used for fall irrigation, and the rest will be used by the Mendota Wildlife Area or other wildlife refuges. The Mendota Pool Group will not pump unless Reclamation has a use for the water.

Paragraph 9
Response: The reversal of gradient discussed on page 4-12 of the EA occurs in the shallow aquifer beneath Spreckels Sugar Co. It does not extend to the San Joaquin River. The groundwater ridge beneath the river (shown on Exhibit C) was not affected by pumping in 1999 or 2000. The direction of groundwater flow in this portion of Madera County will continue to be to the northeast in 2001.

The 1-year pumping program is not expected to significantly affect groundwater levels in the region. Therefore, actions to minimize or avoid the cumulative effects of groundwater pumping were not addressed in detail. These cumulative effects will be addressed in the preparation of an EIS for the proposed 10-year program. To avoid such cumulative impacts, extreme measures would have to be conducted. These actions might include massive retirement of lands in overdrafted areas, or adjudication of the basin so that all groundwater pumping can be controlled.

Paragraph 10
Response: The groundwater modeling conducted to date suggests that the deep zone drawdown due to Mendota Pool Group pumping would be less than 10 feet at the eastern boundary of Newhall Land and Farming during the normal irrigation season. This represents a small percentage of the total drawdown experienced by wells in this area and will not cause significant increases in pumping costs. If future modeling results or monitoring data indicate that significant drawdowns are occurring east of Newhall Land and Farming, those pumpers will also be reimbursed for increased pumping costs. Impacted pumpers would be compensated financially (see Section 4.2.2.1).

Paragraph 11
Response: Only a portion of the water to be pumped by the Mendota Pool Group is likely to be seepage from the Pool. Other major sources are seepage from canals and other surface water features, recharge from precipitation and applied irrigation water, and horizontal flow from upgradient areas.

Changes in groundwater flow direction in Madera County will occur only within the cone of depression of the deep wells when these wells are pumping. The cone of depression created by the shallow wells is more localized and will not extend into Madera County.

Exchange contracts cannot be issued until the environmental documentation is complete. The San Luis and Delta-Mendota Water Authority's policy is that water can be stored in the Pool for a maximum of 60 days during the 2001 water year. Depending on when the exchange contracts are signed, it is possible that the Mendota Pool Group may not be able

to exchange the full 25,000 acre-feet of water with Reclamation and may not get credit for some of the water that has already been pumped.

Paragraph 12

Response: Reclamation determined that a public comment period of 21 days would be appropriate due to extensive review and discussions prior to release of the public comment draft. At the request of Reclamation, the Mendota Pool Group undertook extensive discussions with a number of water users bordering the Pool, including the San Joaquin River Exchange Contractors, Newhall Land and Farming, James Irrigation District, Tranquility Irrigation District, and the California Department of Fish and Game and incorporated all of their comments and concerns prior to the release of the Draft EA. Furthermore, the Mendota Pool Group responded to all of Reclamation's requests for additional data, information, and analyses during the document preparation.

Subsequent to the close of the comment period, Reclamation held an open house at their offices in Fresno California. The purpose of this open house was to (1) present the findings of the draft EA, (2) clarify the scope and intent of the proposed project, (3) ensure that all issues were considered, and (4) provide an opportunity for the project proponents to directly interact with those individuals or agencies that had questions or concerns.

Extension of the public comment period by another 45 days would effectively preclude establishment of the exchange agreements between Reclamation and the members of the Mendota Pool Group.